

# Factors Affecting Users' Attitude toward Facebook Application in Thailand

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**Abstract**— Since Facebook was launched, privacy related issues had been discussed intensively. Facebook's third-party applications became a huge challenge in maintaining user's privacy since user's information can be shared to the developers outside Facebook. This paper studies factors that affect user's attitude on using Facebook application. Based on our hypothesis, three factors are: brand loyalty, user's self benefit and user's social benefit. We conducted an online survey which collected opinions from 246 respondents in Thailand. Respondents were asked to answer the online questionnaire twice, once before and again after reading the story about risk of information disclosure. We performed a regression analysis to test our hypotheses and the result showed that before reading the story, only self benefit affects user's attitude. However, after reading the story, brand loyalty becomes the only factor that user takes into consideration.

**Keywords**— Facebook, information disclosure, privacy, social networking application, attitude towards Facebook application

## I. INTRODUCTION

In the past few years, a rapid growth of E-commerce and online consumer shopping trend has been studied in many dimensions. Businesses build their own website to gain more brand awareness and maintain brand loyalty. Since Facebook became popular, the trend of maintaining relationship with customer via Facebook fan page received a great deal of attention. To spread brand awareness, many companies simply invite people to like or comment on their fan page. When someone like or comment a post, his activity will be display on his friend's news feed and may urge them to join. The result is more people know about the brand and they may become a new customer.

On May 2007, Facebook allowed developers to build social applications on their platform. Facebook announced that they had 65 developer partners and over 85 applications; there were more than 20 million active users at the time. Today, Facebook users install 20 million apps every day and more than 2.5 million websites have integrated with Facebook [1]. Building Facebook application helps improving user engagement and increases the opportunity for the company to reach more users [1]. For example, some applications allow people to share their experience online with their friends. These friends provided increased referral for company's

website, which results in wider consumer, higher income and more employment [1].

However, Facebook privacy problems are on the rise due to involving of third-party application. Once user has authorized the application, it will have a permission to access user's basic information, friend's basic information and additional permissions depend on which permission is required. Even though Facebook requires every application developer to agree to their terms of service (September, 2012) which enforce an application to must not store gathered profile data nor propagate that data further, but there were reports indicated that some applications violated these terms of service. In 2010, The Wall Street Journal revealed that several of the most popular applications had shared users' personal information with advertisers, in violation of Facebook's privacy policies [2]. In 2012, The Wall Street Journal examination of 100 of the most popular Facebook apps found that some seek the email addresses, current location and sexual preference, among other details, not only of app users but also of their Facebook friends [3]. Many studies indicate that people are uncomfortable with disclosure of their personal information [4]. This concern may leads to more careful decision to use an application.

Trust plays an important role in maintaining brand loyalty in both consumer and business-to-business buying situations [5]-[7]. There is a study that indicates the relationship between several structural models of trust and repeat visits to the e-commerce sites [8]. Privacy is an important factor that users give concern and those sites must ensure that user's privacy is protected [9]. Because Facebook application is an online service, brand loyalty may directly affect user's decision like the e-commerce sites. An example of Facebook application that has obviously built to support brand loyalty campaign is "Starbucks Card" [10], which allows users to manage their card through Facebook.

Rewarding is normally used in a loyalty program to directly support the value proposition and position of the product [11],[12]. For example, Citibank invites its customers to participate its rewards and loyalty program, a social experience with its Facebook application named "ThankYou Point Sharing" [13]. With this application, Citibank customers who are on Facebook can pool and share the points they have

earned to receive collective rewards or make a charitable donations. Although Facebook policies (September, 2012) prohibit directly tying incentives to the use of its Social Channels, e.g. rewarding users for the sole act of posting a Stream stories or sending a Request, it allows for referral-based rewards where its Social Channels are indirectly tied to the potential in-app reward. For example, application can reward users based on the number of friends that accept the user's invitation to it. These policies enable application owners to purpose their rewards which may be a factor that attract people to use these applications.

Social marketing adapts commercial marketing technologies to motivate target customers to be a volunteer for their social [14] and help improve brand image [15]. Facebook application can be a tool to help companies spread their campaigns to more target audience through the invitation and posting process. The application may contains static content campaigns for brand awareness, providing rich media, videos, pictures to their audience in shareable format. Some applications require user engagement and invitation to help spread the campaigns. Kohl's department store and TED announced the "Lessons Worth Spreading" program that awarded 18 educators in the United States who create the most impactful and influential lessons [16]. Each lesson will be made into a video and shared on TED's global TED-Ed website. Kohl's encourage students and school supporter to nominate their favorite educator on its Facebook page. Nomination process brings nominator to Kohl's Facebook application which contains an nomination form. This is an example of social marketing campaign which can be a factor that influence Facebook user to use an application.

To make all factors more general, we considered them in users' perspective. Rewarding became a representative of users' self-benefit and social marketing became social benefit in users' perspective. Thus, factors that may affect users' attitude towards third-party application on Facebook are brand loyalty, self-benefit and social benefit. These factors lead to our hypotheses:

H1: Brand loyalty has an effect on an attitude of using Facebook Application.

H2: Self benefit has an effect on an attitude of using Facebook Application.

H3: Social benefit has an effect on an attitude of using Facebook Application.

Our study examines how these factors relating to attitude towards third-party application are associated by conducting a survey. According to the study of Jennifer King [17], majority of observed Facebook user have knowledge about how third-party application exchanged their profile information but that knowledge cannot be a predictor of privacy concern. Instead, adverse privacy events on Social Networking Sites are more reliable predictor. In our study, participants were asked before receive a questionnaire whether or not they had known about the risk of information disclosure by using Facebook application. After participants answered all questions, they will be given the story about information disclosure caused by

Facebook application and then answered the same questions again. This method will examine if they really known their risk and measure how attitude towards third-party application changes after the story was told.

## II. BACKGROUND RESEARCH

In this section, we will review previous studies about privacy concern on Facebook application and related studies of each factor.

Since Facebook became a platform, other third-party companies could create their application with the ability to access users' information, some content that users allowed only their friends to see will then transfer to those companies. To help users protect their personal information, privacy settings page had been introduced with various privacy customization options, allowed users to share their content with "Everyone". However, the complexity of the options caused serious problems since users are confused about what those options meant [18].

To reduce users' confusion, Facebook introduced new privacy settings page with default setting and these default settings is to share the users' information broadly. Broadly means anyone including search engines could find users' content without any authorization involved. Even if their information was published, studies indicated that people rarely change the default settings [19]. Christofides [20] studied about how users' privacy concern and their behavior relating to information control were associated. They concluded that concern and behavior were not correlated. Besmer found that users did not understand the data sharing that occurs between them and the application developers [21]. The result was that there were serious risks of applications maliciously harvesting profile information, and users were not really understand the risks. Besmer also applied the social navigation to built an access control policy configuration [22]. Social navigation is defined as the use of social information to aid a user's decision [23]. This approach used community knowledge and expertise to help users made better security and privacy decision. They found that community information did impact user behavior if the virtual presentation was strong enough.

The effect of knowledge of privacy issues on users' behavior has been studied recently. Cain [24] observed an increment of intention to change Facebook privacy settings after students were given a presentation regarding potential e-professionalism issues with Facebook. Stutzman [25] found that privacy attitudes are controlled by Social Network Sites (SNSs) privacy policy consumption, or comprehension, and privacy behaviors. Jennifer [17] concluded that users' privacy concerns were not related to users' behaviors on using applications. A more reliable predictor of privacy attitudes were adverse privacy events on SNSs.

The concept of brand loyalty has been discussed in traditional marketing [26],[27]. The concept of e-loyalty extends the traditional brand loyalty concept to online consumer behavior [28]. Trust plays a central role in brand loyalty for both behaviors and attitude. Several structural models of trust and its relationship to repeat visits to e-

commerce sites have been presented [29] and privacy is an important dimension of e-loyalty [30].

Rewards can significantly enhance customer's willingness to adopt the company's program [31]. This approach requires an appropriate type of reward that matches to customer's purchase purpose. The study indicated that appropriate reward induces customers to join company's program even though they have to put more effort into it.

It is necessary for organizations to define their role in society and apply social and ethical standard to their business [32]. Organizations increasingly use Corporate Social Responsibility (CSR) activities to position their corporate brand in consumers' perception through reports and websites [33]. This trend reflects consumers' attitude towards social responsibility. We then consider Social Marketing, which motivates customer to be a volunteer, as one of our factor.

### III. RESEARCH METHODOLOGY

#### A. Data Collection

Participants were given a questionnaire and the answers were analyzed to determine whether each factor influences users' decision or not. The survey was available on the website in September 2012 and supported for both desktop and mobile phone browsers. Basic information form was collocated on our landing page and users had to fill this form before proceeding to the questionnaire. We provided the automatic form filling function as an alternative to help respondents fill some basic information including age, location, education and relationship status. To use this automatic function, respondents have to login to Facebook with their own account and allow our Facebook application to access their basic information.

In order to encourage people to join our survey, we proposed rewards for 5 randomly selected winners. We named our website as "YouVoice". We built our Facebook fan page called "YouVoice Community" to engage respondents and increase opportunity to reach more people. According to facebook page insights, our fan page reached 8,991 people, 168 people liked the page and 213 people talked about it. Most reached people are between age of 18 and 24, 52% of all reached people are male. We posted a link to our survey website on our fan page. According to statistical data from Google Analytics, our website had been visited 409 times from 342 unique visitors. From all of these visitors, 246 people answered the survey and they are all in Thailand.

The questionnaire consists of 15 questions. The first question asks respondents whether they had ever known about information disclosure caused by using Facebook application. The next 12 questions are intended to observe 3 factors, including brand loyalty, self benefit and social benefit. Each factor has 4 questions and the last 2 questions are about an attitude towards third-party application. Respondents were asked to answer the questionnaire twice, once before and again after reading the story about risk of information disclosure.

#### B. Data Analysis

Like the great majority of the previous quantitative research on Facebook users, most of our respondents are limited to college age students. Participants in Christofides's online survey [20] were 343 undergraduate students; all 299 respondents in Cain's study [24] were pharmacy students. Besmer [22] collected data from 390 participants and 73% of them were between age of 18 and 30. The 122 subjects in Stutzman's study [25] were in age of 18 to 23.

TABLE 1. RESPONDENT DEMOGRAPHICS

Gender	Male	58.5%
	Female	41.5%
Age	Mean (Range: 14-36)	20.4
	14-19	29.2%
	20-27	68.9%
	28-36	2.0%
Location	Bangkok	74.3%
	Outside Bangkok	25.7%
Education	High School	21.6%
	Undergraduate	74.6%
	Master Degree	3.0%
	Doctoral Degree	0.8%
Relationship status	Single	83.4%
	Married	16.6%

#### C. Hypothesis Model

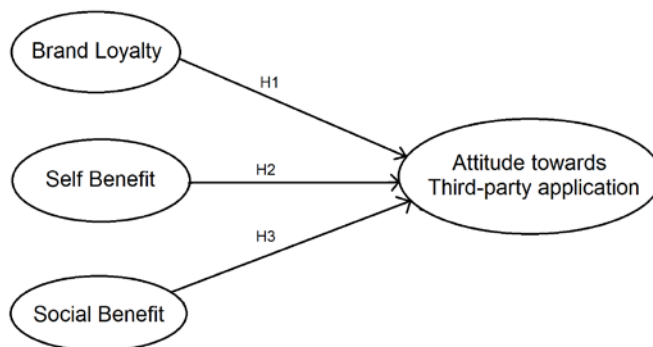


Figure 1. Hypothesis model describes the relation between factors and an attitude towards third-party application

Our analysis model considers three factors that may affect an attitude towards Facebook application. The first factor is brand loyalty which considers whether users' trust in brand has an effect to their attitude or not. The second one is self benefit which considers whether rewards have an effect to users' attitude or not. The last one is social benefit which considers if the application proposed to help society, will it affects users' attitude or not. We illustrated our analysis model in Figure 1.

#### D. Data Analysis

1) **Reliability Analysis:** We did the reliability analysis to all questions that are related to each other to examine reliability of the questionnaire. Cronbach's Alpha value, which must greater than 0.7, is an indicator to determine that questions are reliable. Some questions were eliminated to increase the Cronbach's Alpha value to reach the acceptable

standard. We used 4 likert scale as choices for each question, labeled as “Strongly agree”, “Agree”, “Disagree” and “Strongly disagree”. We did the reliability analysis for answers collected before respondents read the story of information disclosure and had got the Cronbach’s Alpha value at 0.749 then did this analysis again with answers collected after respondents had read the story; the Cronbach’s Alpha value was increased to 0.829. Both Cronbach’s Alpha values are above 0.7 which means our questions are reliable.

2) **Factor Analysis:** After doing reliable analysis, we had 14 questions which are acceptable. Factor Analysis was applied to the questions by using the principle components extractions method and varimax rotation. We calculated the correlation value for each pair of questions and group the most related questions into the same factor. The number of factors was fixed to 3, which will group all questions into 3 factors. Grouping process has been done under these following conditions:

- 1) Factors with given values or latent roots of all components should be greater than 1.0.
- 2) Communalities of all times should be more than 0.5.
- 3) The factor loadings of  $\pm 0.50$  or greater are considered necessary for practical significant, and
- 4) Cronbach’s alpha values of each factor extracted and overall measure should be greater than 0.7.

Items extraction was done once by using answers collected before respondents read the story of information disclosure and again by using answers collected after respondents had read the story. The factor analysis extracted questions into three factors for both set of answers. For the first set, there are four items for brand loyalty, four items for social benefit and four items for self benefit. For the second set, there are three items for brand loyalty, four items for social benefit and four items for self benefit. These factors provide a reliable and consistent measure of intended dimensions and no further elimination of items appears necessary.

3) **Regression Analysis:** We used regression analysis to measure the relation between factors (loyalty, self benefit, social benefit) and attitude toward third-party application. The analysis process divided into 2 models; the first model used collected answers before respondents read the story and the second model used collected answers after the story had read.

Table 2 shows the result from regression analysis of each factor that supports users’ attitude towards third-party application.

We constructed a model to describe the result as shown in Figure 2. All standardized path coefficients are significant at the .001 significance level. The first model indicates a negative relation between self-benefit and attitude towards third-party application. That means attitude towards third-party application can be predicted by self-benefit ( $\beta = -0.27$ ,  $p < 0.01$ ) despite brand loyalty ( $\beta = 0.017$ ,  $p > 0.05$ ) and social benefit ( $\beta = 0.016$ ,  $p > 0.05$ ) which cannot be used to be predictors.

TABLE 2. REGRESSION COEFFICIENTS

Model	UC		SC	t	Sig.
	B	Std. Error	Beta		
* (Constant)	$-2.287 \times 10^{-17}$	0.61		0.000	1.000
Brand loyalty	0.071	0.61	0.71	1.172	0.242
Self benefit	-0.270	0.61	-0.270	-4.429	0.000
Social benefit	0.016	0.61	0.16	0.265	0.791
** (Constant)	$-1.798 \times 10^{-17}$	0.64		0.000	1.000
Brand loyalty	-0.203	0.64	-0.203	-3.185	0.002
Self benefit	-0.032	0.64	-0.032	-0.500	0.617
Social benefit	-0.115	0.64	-0.115	-1.808	0.072

UC = Unstandardized Coefficients  
 SC = Standardized Coefficients  
 \* = Before respondents read the story  
 \*\* = After respondents had read the story

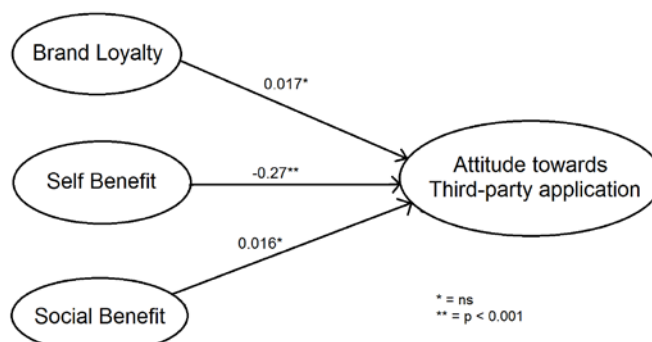


Figure 2. The result from regression analysis of each factor that supports users’ attitude towards third-party application

The second model showed in Figure 3 indicates users’ perspective which had changed after reading the story. Attitude towards third-party application can be predicted by brand loyalty ( $\beta = -0.203$ ,  $p < 0.01$ ) but self-benefit ( $\beta = -0.115$ ,  $p > 0.05$ ) and social benefit ( $\beta = -0.032$ ,  $p > 0.05$ ). The result elucidated that the effect of factors to attitude towards third-party application had changed after respondents had read the story.

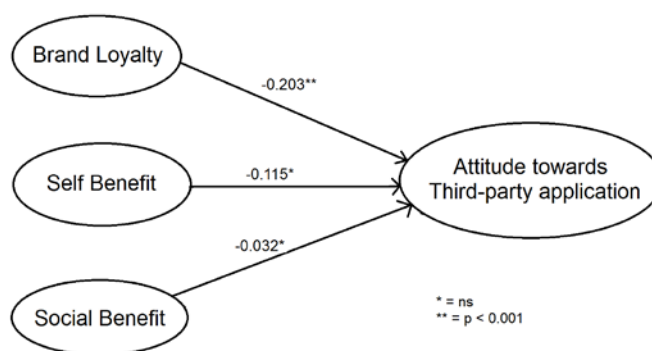


Figure 3. Users’ perspective had changed after reading the story

4) **Compare mean t-test:** We considered the different perspective towards brand loyalty, self-benefit and social

benefit between male and female by using the result from mean comparison. To achieve this purpose, we applied t-test, which compare between regression coefficient and correlation coefficient values, to test our hypotheses. The result of testing hypotheses by t-test for Equality of Means is derived from testing whether mean of both 2 sample group equal or not. We began with the question “Is there significant gender difference in social benefit, self benefit and brand loyalty?” and then defined these definitions and hypotheses:

$U_m$  = the average of {social benefit, self benefit, brand loyalty} for male.

$U_f$  = the average of {social benefit, self benefit, brand loyalty} for female.

Null hypothesis ( $H_0$ ):  $U_m = U_f$  : There is no significant gender difference.

Alternative Hypothesis ( $H_1$ ):  $U_m \neq U_f$ : There is significant gender difference.

We assumed that:

- 1) Dependent variable “social benefit, self benefit and brand loyalty” is numerical variables.
- 2) The dependent variable is normally distributed.
- 3) The two groups have approximately equal variance on the dependent variable.

Independent Samples t-test was used because it needs to test whether the mean of two groups (male and female) are equal or not and the mean in this test are numerical variables.

**TABLE 3.** COMPARE MEAN T-TEST

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.*
social benefit	A	7.525	0.007	-1.720	251	0.087
	N			-1.826	250.902	0.069
self benefit	A	5.707	0.018	-1.380	251	0.169
	N			-1.448	250.253	0.149
brand loyalty	A	2.607	0.108	-0.649	251	0.517
	N			-0.669	244.335	0.504

\* Sig. (2-tailed)

A = Equal variances assumed.

N = Equal variances not assumed.

For social benefit, the Levene's Test for Equality of Variances shows that F ratio (7.525) is significant ( $p = 0.007$ ), the two variances are significantly different; that is the two variances are unequal. So the unequal variances were assumed with t value of -1.826 and 250.902 degree of freedom. The p value is 0.069 which is greater than 0.05 significant level and the calculated t value -1.826 does not exceed the table t value 1.960. Therefore, the null hypothesis could not be rejected and the two means ( $\mu_m$  and  $\mu_f$ ) is not statistically significantly different from zero at the 5% level of significance. Thus, there is no significant experience difference in social benefit.

We applied this method to find out if gender difference is significant in self benefit and brand loyalty. For self benefit,

the Levene's Test for Equality of Variances shows that F ratio (5.707) is significant ( $p = 0.018$ ) and for brand loyalty, the Levene's Test for Equality of Variances shows that F ratio (2.067) is not significant ( $p = 0.108$ ). The two variances are significantly different for social benefit but not significantly different for brand loyalty. Because social benefit is significant ( $p < 0.05$ ), equal variances were then assumed despite brand loyalty ( $p > 0.05$ ), which equal variances were not assumed. Therefore, for both factors, the null hypothesis could not be rejected and two means ( $\mu_S$  and  $\mu_M$ ) are not statistically significantly different from zero at the 5% level of significance. Thus, there is no significant gender difference in social benefit and brand loyalty.

#### IV. DISCUSSIONS

The results of regression analysis show the difference of how factors affect attitude towards third-party application before and after respondents had read the story about the risk of information disclosure caused by using Facebook application. For the answers collected before respondents read the story, self-benefit was the only factor that impacts privacy concern. We implied that if an application proposed rewards, users will tend to use the application and ignore their privacy concern. The more valuable rewards, the less concern happens. This result confirms that self-benefit has an effect to an attitude on using Facebook application (H2). In contrast, brand loyalty did not have a sufficient strong relation with attitude, which means that trust does not play an important role in users' mind; the doubt about who is the application owner were ignored. At the first day our survey was available online, we advertised that we will announce the first prize at 8 pm. The survey was launched at noon and during 8 hours before the first prize was announced, we had around 70 people answered our survey. After the first prize was announced, more than 60 people answered the survey in less than 2 hours. There are 56% of respondents used our Facebook application to help fill out basic information form. This trend emphasizes the result from regression analysis. We asked respondents after they had answered the survey, 15% answered because of the prize, 39% did not think the prize is their main reason but it could attracted them to answer the survey and 46% did not think about the prize.

There are 66% of respondents said that they had ever known about the risk of information disclosure caused by using Facebook application. After respondents had read the story about the risk of information disclosure caused by using Facebook application. The relation between factors and attitude towards third-party application had changed. Apparently, brand loyalty became the only factor that impacts privacy concern. Our implication is that when people are more loyal to a brand, they tend to worry less on using facebook application. This result confirms that brand loyalty has an effect to an attitude on using Facebook application (H1) and users don't really know their risk because even though 66% said that they had ever known about the risk but the trend had changed from self benefit to brand loyalty because of the story. After reading the story, many respondents suspected that our

Facebook application, which helped them fill their basic information, might disclose their information. We had to explain to them that we will not keep their information permanently or share any of their information to anyone. One of our respondents said:

“It doesn’t matter if the third-party applications can access my basic information and use it for statistical analysis unless they access my information individually for any purposes or keep it permanently”

Consider respondent demographics, we found that age, gender, location and education have no relation with an attitude. Like the great majority of the previous quantitative research on Facebook users [22],[24],[25], most of our respondents are college age students between age of 20 and 23 (64.5%). Most of our respondents are living in Bangkok, only small amount of respondents are living outside. That may be a reason why demographics have no significant relation with attitude.

## V. CONCLUSIONS

Self benefit has an effect to an attitude on using Facebook application for users who never experienced the information disclosure caused by using Facebook application or never known about their risk. Users who are concerned about their privacy tend to use the application developed by brand (or people) they trust. Thus, brand loyalty has an effect to an attitude on using Facebook application for users who are concerned about their privacy. However, social benefit does not affect an attitude on using Facebook application. Other factors may be taken into consideration in future work.

Our survey is limited to Facebook Platform users and does not represent all Facebook users. Unfortunately, we cannot compare our data to all Facebook platform users because Facebook did not published platform users statistics. However, we hope that this study can be useful for future research.

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