What Makes Smartphone Users Satisfied with the Mobile Instant Messenger?: Social Presence, Flow, and Self-disclosure

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Abstract

Users of smartphone-based Instant Messenger such as Whatsapp, wechet, LINE and KAKAO TALK are rapidly increasing. LINE acquired more than 50 million members by December 2012 just 1 year after its release, and as of April 2014, the number of LINE mobile instant messenger users was 400 million Users. Given the rarity of research on the use of instant messengers in smartphones, this study analyzed factors affecting user satisfaction by conducting a survey on 220 users of mobile instant messengers in smartphones. The survey results showed that self-disclosure, flow, and social presence significantly affected user satisfaction. This study will benefit researchers and contribute to industries that possess interest in factors affecting user satisfaction regarding the use of smartphone applications and mobile messengers.

Keywords: Mobile Instant Messenger, Mobile Instant Messaging, Mobile Social Networking Service (SNS)

1. Introduction

Low quality of the early mobile devices, with insufficient computational power, small displays, and difficulty in accessing the wireless Internet connection, constituted a severe barrier to the deployment of rich educational materials [1]. Present mobile communication terminals show unparalleled improvement in performance as well as functions compared to early voice call terminals. As mobile communication terminals have high performance and multi-functionality, the number and size of applications embedded in terminals also are surging naturally. Accordingly, terminal manufacturers should produce terminals which can efficiently manage and reuse a number of applications now. In the meantime, users expect the era when they can use many applications and contents which were used in existing wired networks in any places easily by integrating with mobile communication terminals. The demands from users and market serve as a momentum to open opportunities for communication businesses to build a new market by optimizing service and contents in mobile communication networks. Likewise as interests of terminal manufacturers, consumers, and communication companies coincide with each other, the market of smartphones

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naturally grows rapidly [2]. The smartphone market succeeded in achieving a high growth rate even amid a depression of the cell phone market during the 2009 global economic crisis. While the smartphone market achieved a growth rate of 24% in 2009, it achieved an even higher growth rate of 43% in 2010. The market is expected to achieve a growth rate of 40% in 2013 [3].

As of July 2014, the number of mobile instant messenger users was more than 500,000,000 Whatsapp users, 450,000,000 LINE users, 438,000,000 WeChat users and 140,000,000 Kakao Talk users. The use of mobile instant messengers is expected to continuously increase in the future [7, 8]. In particular, LINE acquired more than 50,000,000 members by July 2012 just 1 year after its release, and as of April 2014, the number of LINE mobile instant messenger users was 400,000,000. According to the ranking for free social networking software in the AppStore, the instant messenger LINE took 1st place in the social networking category thereby verifying the great popularity of instant messengers among social network services [9].
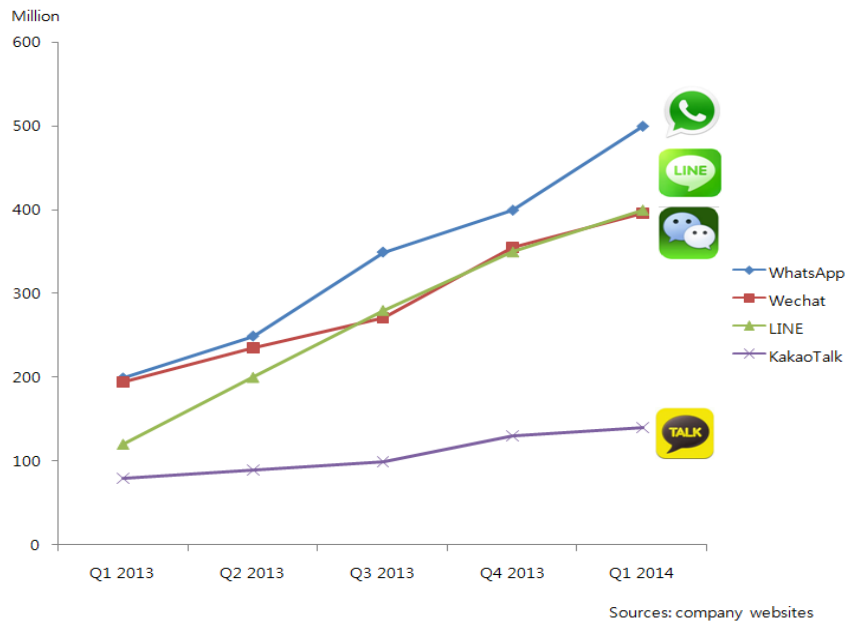
Figure 1. Registered Users of Most Important Instant Messenger

Users of smartphone-based Social Network Service (SNS) are rapidly increasing in number along with the development of the smartphone market, and it is predicted that the number of users will continuously increase. SNS refers to the service that facilitates formation of relationships between online users that possess similar interests and provides various activities, such as managing personal connections and sharing information and contents for such relationships [4]. According to research on the use of SNS by smartphones, it was verified that 64% of smartphone users between the ages of 12 ~ 59 use SNS [5]. SNS can be largely classified into web-based social network services and Instant Messenger-based social network services [6]. This study investigated user satisfaction of SNS services by doing research on Instant Messenger users among various social network services.

The purpose of this research is to investigate factors affecting user satisfaction for smartphone instant messengers. In spite of popularity and increasing users, there is a lack of empirical research on this topic. This study has conducted a survey on smartphone instant messenger users in order to research user satisfaction and investigate factors affecting user satisfaction. The paper proceeds as follows. Section 2 introduces the key literatures and describes hypotheses. Section 3 presents methodology. Section 4 provides data analysis. Section 5 concludes with a discussion of the findings, suggestions for future research and implications of the research.

2. Literature Review and Research Hypotheses

2.1. Mobile Instant Messenger

When Internet service first started facilitating inter-communication and cooperation between individuals, messenger was first introduced in 1996 by a company named Mirabilis. Mirabilis launched a service named ICQ ("I Seek You"), which enabled friends to send online messages with one another through their PC [10]. Since Messenger possesses the same meaning as Instant Messenger, the two terms are frequently used together. Messenger refers to the service for actualizing various interactive communications within cyber space, such as verifying the access of other users, or sending and receiving messages or files between individuals or groups [11]. Mobile Instant Messenger refers to instant messaging using mobile devices, such as cell phones or PDA. It enables users to connect to the Internet through mobile devices in order to achieve interactive communication within cyber space, such as verifying access of other users, sending real-time messages, chatting one-on-one or multilaterally, or sending files [12]. Mobile Messenger is a service that has achieved improvement in terms of efficiency when compared to previous PC-based messengers as it provides communication that is more abundant and enables users to achieve quicker communication based on mobility. In addition, when compared with previous SMS or PC-based instant messaging, it can be said that Mobile Messenger allows users to abundantly express emotions in terms of a Social Presence [13].

2.2. User Satisfaction

Previous studies have observed user satisfaction as an important factor that affects the success and usage of the information system [14]. User satisfaction, which is one of the most commonly used dependent variables, is defined as the sum of attitudes or feelings regarding various factors that affect certain situations [15], and is regarded as the user's evaluative response on the information system [16]. As Mobile Messenger is a service that was also created by using information technology, an analysis on the factors affecting satisfaction of Mobile Messenger users is required in order to move along discussions on success factors and on expanding the user base of Mobile Messengers. This study established a research model shown in Figure 3 in order to analyze the factors affecting the satisfaction of mobile messenger users.
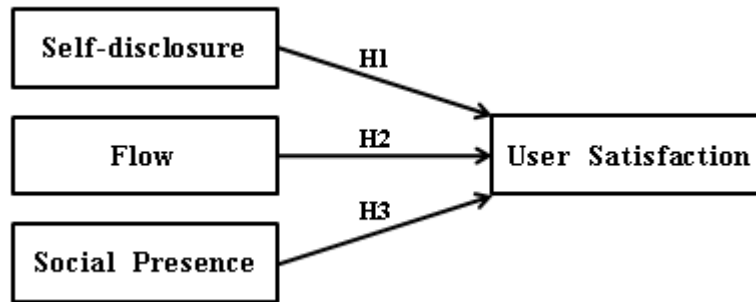
Figure 2. Research Model

2.3. Self-disclosure and User Satisfaction

Self-disclosure is defined as a process that enables others to verbally read one's private information, such as personal emotions, experiences, or opinions [17]. Self-disclosure is a important communication behaviour for establishing and maintaining human relationships [18]. Exchange of self-disclosure has been verified as an important factor in not only enhancing good feelings between two people [19], but also in forming satisfactory long-term relationships [20]. People have a tendency to develop favourable feelings toward the people they have exposed themselves [19]. Furthermore, self-disclosure not only helps establish relationships with others, but it provides a catharsis for exposing personal information [21]. Thus, the exchange of self-disclosure is regarded as an extremely significant variable in achieving satisfaction through interaction in relationships [20, 22]. Schau and Gilly (2003) stated that the concept of self-expression can be an important factor in researching SNS services, such as micro-blogs [23]. This study established the following hypothesis based on such previous studies.

H1: Self-disclosure has a positive effect on user satisfaction.

2.4. Flow and User Satisfaction

Flow refers to the state of being completely absorbed in a certain act, for example, losing the sense of time and becoming unaware of surrounding situations. Situational flow through interactive media refers to the cognitive state experienced during activity in computer-interactive environment [24]. Experienced by participants deeply related with certain situations, goals, and activities, this cognitive state refers to the status of being completely absorbed in the situation [25]. Flow is the factor that affects satisfaction and performance of activities in various areas, such as sports, leisure, sociology, and business [26]. The importance of flow has been emphasized in relation to satisfaction and performance of services using information technology. Flow enables users to discover enjoyment in the process to show more active participation in the activity to gain greater satisfaction. Various studies have verified that flow in cyber environments is a variable that significantly affects satisfaction [27]. Flow is a positive strengthener that increases future use of the information system in a computer environment [28]. This study presents the following hypothesis based on such previous studies.

H2: Flow has a0ositive effect on user satisfaction.

2.5. Social Presence and User Satisfaction

As a concept for explaining the psychological experience formed by interaction between communicators, social presence can be defined as the "salience of the other in communication interaction" [29]. Steuer (1992) defined social presence as the sense of being within a certain environment, stating that the sense of being in a distance place is the experience of sensing each other's existence in a certain environment through the communication medium [30]. It has been verified that social presence in cyber space can form positive relationships with the creation of results, such as satisfaction [31]. On the other hand, instant messenger has been verified to facilitate real-time dialogues to provide social presence to users, thus enabling users to forget about the computer medium and feel as if he or she is actually existing in the same space as the other user [32]. Certain studies predict that the mobile messenger will provide abundant emotional expressions in terms of the social presence, as the new mobile messenger can be accessed anywhere and anytime unlike previous SMS, PC-based instant messengers. However, this hypothesis has not been empirically proven by research results. As the appearance of smartphones have enabled users to exchange more information through mobile messengers, social presence, in relation to sharing emotions with others and experiencing co-existence with other distant users, can be regarded as a factor of greater significance for mobile messenger users. Thus, this study presents the following hypothesis.

H3: Social presence has a positive effect on user satisfaction.

3. Methodology

In order to prove the research model and hypothesis, self-disclosure was defined as the act of revealing personal information, such as private emotions and opinions, and was composed of four. Flow was defined as the state of being completely absorbed during use of the mobile messenger service and was composed of three items. Social presence was defined as the state of feeling as though the user has personally met the other user during the use of the mobile messenger service, and was composed of four items. Satisfaction for user experience was defined as the degree of satisfaction when using a mobile messenger and was composed of three items.

A survey was conducted on actual users of smartphone instant messengers. The questionnaire asked participants to rate the extent to which they agree with each statement by circling a number from one to seven with fourteen items. A total of 220 surveys were collected, and 202 surveys, excluding 18 inaccurate surveys, were used in the data analysis. The 202 respondents were composed of 64 women (32%) and 138 men (68%), with 162 people in their 20s (80%) and 40 people in their 30s (20%). Also, the survey results showed that 90 people used a mobile messenger for less than 30 minutes per week (45%), 76 people used a mobile messenger for 30 min ~ 1 hour per week (38%), 30 people used a mobile messenger for 1 hour ~ 3 hours per week (15%), and 6 people used a mobile messenger for 3 ~ 5 hours per week (3%). Data analysis was conducted with SPSS ver. 18.

4. Data Analysis and Results

4.1. Factor Analysis

To test the construct validity of the measurement, we conducted a factor analysis on the survey questions using a principal component analysis, with a varimax rotation. Factor lading

cutoff was set with value greater than 0.5. Factors with eigen value greater than 1.0 are extracted. As a result of factor analysis, two factors are exacted, named "Self-disclosure", "Flow", "Social presence", and "User satisfaction". Results are shown in Table 2.

4.2. Reliability Analysis

The reliability, Cronbach's α, is the estimated ratio between true variance and total variance. Thus, the reliability is an estimation of the percentage of the total variance of a variable that is due to real differences between subjects. A measurement instrument with a value of 0.6 or greater is generally considered satisfactory in terms of reliability.

All four factors, self-disclosure, flow, social presence, and user satisfaction show significant reliability level, ranged from .762 to .945 by Cronbach's α in Table 2.

Table 2. Results of Factor Analysis and Reliability Analysis

Variables	Items	Factor1	Factor2	Factor3	Factor4	Cronbach's α
Self-disclosure	SDI3	.931				.945
	SDI2	.916				
	SDI1	.881				
	SDI4	.684				
Flow	FLO2		.849			.813
	FLO1		.838			
	FLO3		.705			
Social Presence	SPR3			.893		.859
	SPR4			.831		
	SPR2			.596		
User Satisfaction	SAT3				.788	.762
	SAT2				.779	

4.3. Correlation Analysis

As complementary statistical evidence, a correlation analysis was performed to analyze relationships between self-disclosure and user satisfaction, between flow and user satisfaction, between social presence and user satisfaction. We determined significant by $p < .05$.

Significant correlations were found between all variables. Correlations between variables are shown in Table 3.

Table 3. Results of Correlation Analysis

Variables	Self-disclosure	Flow	Social Presence	User Satisfaction
Self-disclosure	1			
Flow	.463**	1		

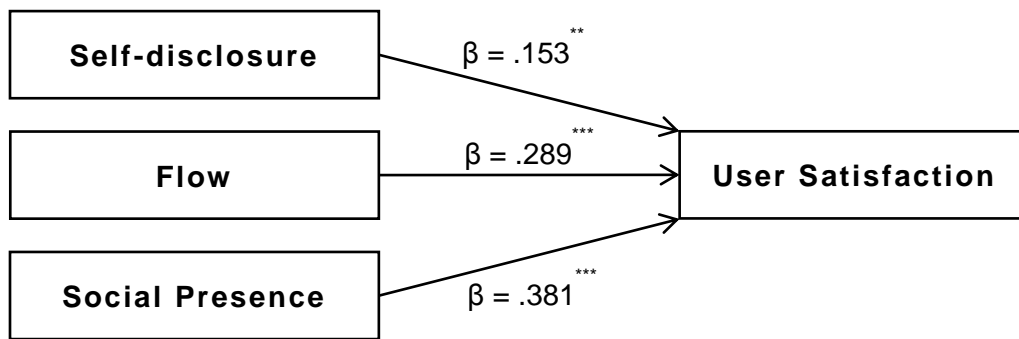| Social Presence | .596** | .422** | 1 | |
| User Satisfaction | .514** | .521** | .594** | 1 |

*p<.1, **p<.05, ***p<.01

4.4. Regression Analysis

Finding of the regression analysis on the relationship between self-disclosure and user satisfaction shows the significant associations, supporting the hypothesis 1. Finding of the regression analysis the relationship between flow and user satisfaction shows the significant associations, supporting the hypothesis 2. Finding of the regression analysis the relationship between social presence and user satisfaction shows the significant associations, supporting the hypothesis 3. Details are shown in Table 4 and Figure3.

Table 4. Results of Regression Analysis

Variables	B	Std. Error	β	t	p	R^2
(Constant)	.855	.283		3.021	.003	.456
Self-disclosure	.149	.066	.153	2.242**	.026	
Flow	.281	.059	.289	4.787***	.000	
Social Presence	.408	.071	.381	5.714***	.000	

*p<.1, **p<.05, ***p<.01

Figure 3. Results

5. Conclusions and Discussions

This study conducted the survey on mobile messenger users to investigate the effect of self-disclosure, flow, and social presence on the user satisfaction of mobile messengers. The survey results showed that self-disclosure, absorption, and social presence significantly affected user satisfaction; the influence shown in the order of magnitude from greatest to least was social presence, flow, and self-disclosure, respectively.

The theoretical contributions of this study lies in the finding that social presence is the most powerful predictor, among others, of user satisfaction with IM use in smartphones. Self-disclosure has been regarded as the most fundamental antecedents of interpersonal

communication, but using IM with mobile devices generates somewhat different use context and condition for satisfaction. With the mobility, users perceive the feeling of being together at any time and places as the most important factor of satisfaction.

The practical contributions of this study are as follows. First, since self-disclosure has been shown to be a factor affecting user satisfaction, industries should realize that the development of functions for facilitating easier self-disclosure of mobile messenger users should be considered during mobile messenger production and planning. Diversification regarding font, emoticon, or flashcon can be cited as a specific measure. Second, since flow has been verified as a factor affecting user satisfaction, industries should realize that an environment for achieving better user absorption during the use of mobile messengers should be provided. Thus, factors hindering absorption, such as the Internet cut-off phenomenon or, data transfer delay problems must be eliminated to maintain a stable Internet status. In addition, a wide bandwidth for transmitting abundant information should be provided to users and an appropriate size for advertisements must be established to prevent ads from blocking the view of users during communications. Third, since social presence has been presented as a factor affecting satisfaction, providers of mobile instant messengers must consider functions for maximizing social presence, such as establishing the same background screen to make users feel as though they are in the same space or announcing the current status of users by displaying messages such as "the user is currently writing a message". That is to say, mobile SNS providers need to improve their interfaces and provide users with a compelling experience.

This research has some limitations. We conducted this research in S. Korea, where mobile instant messenger is spreading rapidly but is still in its infancy. Thus future research needs to be generalized to other countries after mobile instant messenger reach some maturation point. Also, a longitudinal research may provide more insights into users' behavior. We conducted a survey of graduate school students. Although students represent the largest groups of mobile instant messengers, future research needs to consider other social groups for its sample populations, *e.g.*, working professionals.

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