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A study of the continuous usage intention of social software in the context of instant messaging

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Abstract

Purpose – As social networking is becoming more popular, social software has achieved an important position in the internet business industry. For social software to be successful, it is crucial to understand how users form their continuous usage intentions toward social software. This paper aims to discuss these issues.

Design/methodology/approach – Drawing upon socio-technical and social cognitive perspectives, this study proposes a theory-based model that investigates the interaction effects between social (i.e. perceived user base and relationship commitment) and technical (i.e. perceived system quality) factors of social software, in addition to their direct effects on continuous usage intentions. To empirically validate the proposed research model, a structural equation modelling technique was used.

Findings – The results of our model test indicate that all relevant social and technical factors are significant determinants of continuous usage intention. Moreover relationship commitment exhibits a positive interaction effect with perceived system quality on continuous usage intention, while perceived user base does not.

Practical implications – Service designers or providers of social software should make an effort to nurture social relationships among users, expand users’ social networks, and reinforce users’ relationship commitment to their friends.

Originality/value – Given the lack of investigations into socio-technical interactions in prior social software studies, the theoretical perspectives and empirical findings of this study are useful to both academics and practitioners. The findings also raise new implications regarding the various types of interactions (e.g. enhancing or suppressing) between the social and technical factors around social software.

Keywords Continuous usage intention, Instant messenger, Interaction effects, Social cognitive perspective, Social software, Socio-technical perspective

Paper type Research paper

Introduction

With the extensive diffusion of the World Wide Web, various types of social software have spread rapidly and increasingly influence both businesses and individuals’ daily lives. Social software can be defined as “tools and environments that support activities in digital social networks” (Klamra et al., 2007, p. 72). Social software typically includes instant messages, blogs, social networks, media-sharing services, and
social-bookmarking services. Such social software is becoming more popular, because it provides flexible social connectivity with functionalities that enable people to communicate, collaborate, and share various contents, and has thus achieved an important position in the internet business industry (Parameswaran and Whinston, 2007).

For social software to be successful, it is crucial to make sure that current users continue to use it. In this regard users’ continuous usage has been discussed as a major factor in the success of social software (Dron, 2007). For example, when I Love School (www.iloveschool.co.kr) initiated its alumni search and community service in South Korea in 1999, it reached seven million users within just one year, which was 15 per cent of the population of South Korea at that time. At present, however, this service is ranked only 976th among the most-visited websites in South Korea (Rankey.com, 2010). One of the main reasons for this marked failure is the lack of an ongoing motivation to maintain relationships among alumni members. Although its users experienced great pleasure from finding their old friends with its strong initial search capability, their interactions gradually decreased over time, because they could not maintain a strong motivation to maintain such nostalgic relationships. MySpace (www.myspace.com) is another interesting example of such a failure. In 1997 MySpace had five times more visitors than Facebook (Tancer, 2007), but now it is ranked only 159th in terms of global traffic while Facebook ranks 2nd (Alexa, 2012). For the evident failure in the continuous use of this social software, industry experts have identified several possible technical issues, including complex functionality for configuring a personalised appearance (Wunker, 2011) and belated adoption of new features (e.g. mobile technology) (Baer, 2010). These two examples clearly illustrate that both social and technical factors are directly related to users’ continuous usage of social software. The importance of these social and technical factors has been discussed throughout the social software literature. For example several studies have partly emphasised reciprocal relationships among users, social environment, and technology quality as critical factors to be considered for the successful use of social software (Whitworth and Moor, 2003; Farkas, 2007).

In this study we focus on instant messaging, “an internet-based application that provides close to real-time communication between people” (Lee et al., 2006, p. 103), as the social software context. Instant messaging is used widely by many people for various purposes, including recreation with friends or collaboration with colleagues in the workplace (Huang and Yen, 2003). The number of instant-messaging users in the world increased from 759 million in 2008 (Branch, 2009) to 3.1 billion in 2012 (Radicati, 2013). In this context, competition among instant-messaging service providers to expand their market share is intensifying (Cutler, 2012). Branch (2009) and Radicati (2013) investigated the number of users of instant messenger in 2008 and 2012 by collecting information from vendors via interviews and surveys. Those methods are generally accepted in research fields and the statistics are deemed appropriate to reflect the actual numbers of IM users. Addressing this current business concern, this study aims to investigate the manner in which users form their continuous usage intentions toward instant messaging. In particular, to provide an integrated view of the two vital aspects of social software (i.e. social and technical), this study adopts socio-technical and social-cognitive perspectives.
The socio-technical perspective assumes that the outputs of a work system result from interactions between social and technical factors (Bostrom and Heinen, 1977). Whitworth and Moor (2003) argued that social software should be designed from this socio-technical perspective, as social software plays a successful role in supporting the social system (e.g., people and their environment) on the basis of a technical system (e.g., software and hardware). Previous socio-technical studies, however, have not explained the specific mechanisms underlying the interactions between social and technical factors with rigorous theoretical bases and statistical evidence (Lin and Lee, 2006b; Choi et al., 2008). To address these gaps in the literature, we adopt a social cognitive perspective, which explains the mechanisms of reciprocal relationships among human behaviour, personal, and environmental aspects (Bandura, 1986). According to this perspective, human behaviour continuance or modification is understood as an outcome of influences and interactions among a person's beliefs/cognition, prior actions, and social influences. This perspective has been considered helpful for understanding and predicting individual-level behaviour and decision making in various contexts, such as consumer behaviour and media selection (LaRose, 2009). Therefore the social cognitive perspective is well suited to explaining the interactions between the social and technical factors involved in social software. Based on these theoretical bases, this study aims to theoretically and empirically investigate how the social and technical factors of social software lead to users' continuous usage intention in the context of instant messaging. Through this study the following relevant questions will be answered:

**RQ1.** What are the key social and technical factors of instant messaging that lead to users' continuous usage intention?

**RQ2.** How do these factors interact with each other to determine the continuous usage intention, and what are the underlying cognitive mechanisms of the interactions?

### Research background

#### Socio-technical perspective

The socio-technical perspective has been widely applied in the design of organisational change and work systems (Mumford, 2006). Leavitt (1976) suggested viewing organisations as multivariate systems composed of four factors: tasks, people (actors), technology, and structure. He argued that the designer of organisational change should consider not only the appropriateness of each factor but also the interactions among factors. In the information systems (IS) literature the socio-technical perspective has provided principles for designing and implementing information systems with a balance between social and technical factors (Mumford, 2006). Bostrom and Heinen (1977) argued that to successfully achieve IS adoption and diffusion, system designers should carefully consider the relationships and interactions among socio-technical factors.

Computer-mediated communication (CMC) and social software research have also adopted the socio-technical perspective (e.g., Hiltz and Johnson, 1990; Whitworth and Moor, 2003; Lee et al., 2006; LeRouge et al., 2007). In particular, Hiltz and Johnson (1990) argued that CMC is a socio-technical system and that its adoption and usage are strongly affected by the characteristics of the social context of relevant users and
applications. Likewise Lee et al. (2006) suggested examining personal interests and social context as psycho-social factors and technological attributes as the technology factor of e-commerce businesses. In line with these arguments, this study proposes “perceived user base” and “relationship commitment” as the social factors and “perceived system quality” as the technology factor in instant messaging, a type of social software.

**Social cognitive perspective**

Although the socio-technical perspective clearly suggests that IS designers need to consider the interactions between the social and technical factors of an information system, most previous socio-technical studies have not elucidated why and in what manner they interact (e.g. Lin and Lee, 2006b; Choi et al., 2008). To address these limitations of existing socio-technical studies, we adopt the social cognitive perspective. Social cognitive theorists argue that people shape thoughts about themselves and the world via social interactions (Bandura, 1986; Cervone, 2004; LaRose, 2009). This cognitive process serves as a foundation for understanding human social behaviours. In particular Bandura (1986) suggested triadic reciprocal relationships among human behaviour, personal, and environmental factors to understand and predict a person’s behavioural continuance or modification. Cervone (2004) also indicated that a person’s decision making and behaviour are influenced by his/her cognitive structure (e.g. beliefs, evaluation standards, and aims/goals), which is formed by culture and society (also see Howard, 1994). According to LaRose (2009) these reciprocal relationships can be understood in terms of three cognitive processes: outcome expectations (through indirect or direct experiences), self-efficacy, and self-regulation.

The social cognitive perspective may adequately explain the interactions between the social (i.e. perceived user base and relationship commitment in our context) and technical (i.e. perceived system quality in our context) factors involved in social software. In particular perceived system quality as a technology factor can be viewed as an environmental factor, while relationship commitment serves as a personal factor. These personal and environmental factors have a reciprocal or interactive relationship; for example a person’s beliefs and cognitive competences are affected by the social context within their environment, while at the same time, a person’s perception of the environment (e.g. value and preference) is also affected by his/her personal beliefs or interests. According to Bandura (1986), particularly for the social diffusion of innovations, similar reciprocal interactions occur among or within various personal and environmental factors (e.g. psychosocial determinants, properties of innovations, and networking structure). In the literature this theoretical perspective has been usefully adopted for various technology-related behavioural settings, such as media selection (LaRose, 2009), news sharing (Lee and Ma, 2012), and word-of-mouth in social networking (Lee et al., 2012).

**Research model and hypotheses**

Figure 1 shows our research model. Based on the socio-technical and social cognitive perspectives, the research model focuses on investigating two facets: direct effects of social and technical factors on users’ continuous usage intention of social software; and interaction effects between relevant social and technical factors.
Perceived user base

Perceived user base represents “the degree to which an individual thinks a certain size of users is already using the system” (Kang, 1998, p. 421). According to Rogers (2003) the diffusion of a new technology accelerates as the base of users who have already adopted the technology increases. Such an existing user base has been considered to affect the perceived value of an IS application (Conner, 1995). This is known as the network effect or network externality, which refers to “the increase of consumer utility when more consumers become the users of the same product” (Cheng and Tang, 2010, p. 437). This network effect of the perceived user base has been discussed in relation to the success or failure of various CMC technologies, including short text messaging (Kim et al., 2008), social networking (Sledgianowski and Kulviwat, 2009), and instant messaging (Li et al., 2005). In particular, having a larger user base of a network communication system can increase its content availability and/or service utility (Prasad et al., 2010), thus resulting in a positive network effect (Cheng and Tang, 2010). Based on this positive network effect of the perceived user base, we argue that the more people who use instant messaging, the more chances the users will have to communicate with other users. This motivates users to continue using instant messaging services. Therefore we propose our first hypothesis as follows:

\[ \text{H1a. The perceived user base of an instant messaging service is positively associated with continuous usage intention toward instant messaging.} \]
Relationship commitment
Relationship commitment refers to the degree of a person’s belief and feeling toward maintaining an established relationship (Li et al., 2005; Hong et al., 2008). This represents the personal interest aspect of the socio-technical perspective (Lee et al., 2006). When people have greater relationship commitment, they make more effort or take more time in maintaining the relationship (Campbell and Lee, 1992). The literature has discussed this personal commitment in a variety of contexts. According to Casalo et al. (2007) for example, users’ commitment toward a virtual brand community is positively related to their consumer loyalty. Similarly, users’ relationship commitment in an interest-based online community has also been found to reduce their propensity to leave (Yen, 2009). These findings imply that strong relationship commitment in a virtual community can affect its users’ continuous usage intention by increasing their loyalty to the community (Jin et al., 2010). Based on these arguments we propose the following hypothesis:

H1b. The relationship commitment within an instant messaging service is positively associated with continuous usage intentions toward instant messaging.

Perceived system quality
When users communicate with others using a CMC technology, the quality of the technology is crucial for seamless communication as a main objective of the technology (Liao and Tsou, 2009). Although the existing research proposes a variety of quality dimensions of information technologies (e.g. system, information, and service) as antecedents of successful system use (Lin, 2007), we investigate perceived system quality as a principal technical attribute of social software. Other quality dimensions (i.e. information quality and service quality) are considered to have relatively less impact within the context of instant messaging. The information quality of an instant messaging service is determined by real-time messages between communication partners, and not by the instant messaging itself. Furthermore, compared with other types of IS, the user interface and usage method of instant messaging are relatively simple and thus users tend to rely less on technical support from service providers (Farkas, 2007). System quality can be perceived in terms of response speed, ease of use, and reliability of the focal system (Moraga et al., 2006). Researchers have reported that this system quality influences intentions to use blogs (Wang and Lin, 2011), online learning systems (Lin, 2007), and e-commerce websites (Kuan et al., 2008). In particular, the system quality of a virtual community or a blog has been argued to increase users’ perceptions about the utility of the focal community and thus result in continuous use intention (Lin and Lee, 2006a; Lu and Lee, 2010). Based on these arguments we propose the following hypothesis:

H2. The perceived system quality of an instant messaging is positively associated with the continuous usage intention regarding instant messaging.

Interaction effects
From the social cognitive perspective, the perceived user base and relationship commitment can be viewed as a user’s cognitive structures in terms of the environmental and personal factors involved in social software, respectively. We argue
that these cognitive structures have interactive relationships with the perceived system quality in forming users’ continuous usage intention regarding instant messaging. First, the perceived user base may help form a cognitive structure regarding the environment of the instant messaging service in use (i.e. perception of the network effect and utility). A user’s belief regarding the number of users who use the same communication tool affects the perception of the tool’s benefit; that is, as users’ cognitive structure, the perceived benefit from the perceived user base may increase from their positive belief in the value of the instant messaging. As a result users will be likely to develop a more positive attitude toward the value of the instant messaging system’s quality (Conner, 1995; Wang and Lin, 2011). In particular, if users can enrol many important friends in the buddy list of the instant messaging service they use, instant messaging will be recorded as a more important communication tool in users’ cognitive structure. This record in their cognitive structure, along with the positive appraisal results on system quality, may render it more difficult for users to discontinue using the instant messaging service or to switch to other tools (Cervone, 2004). This synergetic relationship between the perceived user base and system quality can also be explained by the outcome expectation mechanism through observational learning. According to LaRose (2009) people can form or modify outcome expectations by observing others’ behavioural patterns and their gaining advantages through new media and technology. Therefore, users’ perceptions of an instant messaging service’s adoption by many other users (i.e. observational learning) have a positive interaction with the users’ perceptions of the system quality. Based on these arguments we propose the following hypothesis:

**H3a.** The interaction between the perceived user base and perceived system quality of an instant messaging service is positively associated with a continuous intention to use instant messaging.

Second, according to the social cognitive perspective, users’ relationship commitment reflects their beliefs or interests in the relationship with others as their cognitive structure. This relationship commitment makes users perceive instant messaging as an enjoyable communication tool (Li et al., 2005). Accordingly, when users have greater relationship commitment, they are likely to have more interest in system quality for more effective communication. Therefore users’ relationship commitment may reinforce the value of the perceived system quality of the instant messaging service. This means that users’ relationship commitment influences the appraisal process of system quality (Cervone, 2004). Furthermore, users’ perceptions regarding high system quality can improve their perceived value of an online community and thus facilitate their commitment to relationships within the community (Gupta and Kim, 2007). In particular, when users recognise that the instant messaging system is of good quality, they can develop higher expectations for developing profound relationships with their friends without experiencing any functional difficulties. Moreover, if additional service features (e.g. notification of the listed buddies’ birthdays) are available, users can more readily maintain or enhance their relationships with their friends, leading to stronger intentions to continue to use instant messaging.

This synergetic relationship between users’ relationship commitment and perception of system quality can be explained by the outcome expectation mechanism through enactive learning. According to LaRose (2009) people can form or modify outcome
expectations from their direct personal experience, particularly for ongoing media selection. Therefore users’ relational interaction experiences with their friends (i.e. enactive learning) have a positive interaction with their perceptions of system quality. Likewise users’ appraisals of system quality through their direct use experiences have a positive interaction with their personal cognitive structure on relationship commitment. Based on these arguments we propose the following hypothesis:

\[ H_{3b}. \text{ The interaction between relationship commitment and perceived system quality of an instant messaging service is positively associated with the continuous intention to use instant messaging.} \]

### Research methodology

#### Data collection

A web-based survey was conducted for data collection. A total of 331 completed surveys were obtained in South Korea. Respondents’ ages ranged from 18 to 31, with 78.9 per cent \( (n = 261) \) in their 20s. Considering that individuals in their 20s have the highest instant messaging usage rate in South Korea (Korea Communications Commission and National Internet Development Agency of Korea, 2008), the sample was considered to be appropriate for the particular context of this study. All respondents were active instant messaging users and reported actively using one (71.3 per cent, \( n = 236 \)) or more (28.7 per cent, \( n = 95 \)) instant messaging services as their main communication tools with their friends, including NateOn \( (n = 301) \), Windows Live Messenger \( (n = 88) \), Buddy Buddy \( (n = 10) \), Skype \( (n = 5) \), and others \( (n = 15) \). A total of 80.1 per cent \( (n = 265) \) of respondents had used instant messaging for more than four years, and 42.3 per cent \( (n = 140) \) of respondents always had their instant messaging service open when using their computers. Table I shows the respondents’ characteristics.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Options</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>165</td>
<td>49.8</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>166</td>
<td>50.2</td>
</tr>
<tr>
<td>Period of IM use</td>
<td>&lt; 1 year</td>
<td>7</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>1-2 years</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>2-3 years</td>
<td>15</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>3-4 years</td>
<td>38</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>&gt; 4 years</td>
<td>265</td>
<td>80.1</td>
</tr>
<tr>
<td>Average hours of IM use per day</td>
<td>&lt; 1 hour</td>
<td>171</td>
<td>57.1</td>
</tr>
<tr>
<td></td>
<td>1-2 hours</td>
<td>89</td>
<td>26.9</td>
</tr>
<tr>
<td></td>
<td>2-3 hours</td>
<td>50</td>
<td>15.1</td>
</tr>
<tr>
<td></td>
<td>3-4 hours</td>
<td>16</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>&gt; 4 hours</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>No. of IM in use</td>
<td>1</td>
<td>236</td>
<td>71.3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>82</td>
<td>24.8</td>
</tr>
<tr>
<td></td>
<td>&gt; = 3</td>
<td>13</td>
<td>3.9</td>
</tr>
<tr>
<td>Type of IM use</td>
<td>Always on</td>
<td>140</td>
<td>42.3</td>
</tr>
<tr>
<td></td>
<td>When chatting</td>
<td>191</td>
<td>57.7</td>
</tr>
</tbody>
</table>

**Note:** \( n=331 \)

Table I. Sample characteristics
Measures
For the empirical validation of the proposed research model, we adopted the survey method. Table II shows our operationalisations of the research constructs and the sources of their items. The items were measured on a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). The items of each construct are provided in the Appendix.

Data analysis and results
The Partial Least Squares structural equation modelling technique was used for data analysis. Data analysis was conducted in two steps: assessment of the measurement model and assessment of the structural model (Henseler et al., 2009). SmartPLS 2.0 M3 (Beta) was used for data analysis (Ringle et al., 2005).

Measurement model assessment
To evaluate our measurement model, we conducted convergent and discriminant validity tests. First, for convergent validity, we tested the composite reliability, item reliability, and average variance extracted (AVE) of the research constructs. Nunnally and Bernstein (1994) suggested that composite reliability scores above 0.8 are adequate in an advanced stage of research. Table III shows that all composite reliability values of our research constructs were between 0.89 and 0.95. Item reliability can be satisfied when the values of the standardised outer loading scores are higher than 0.7 (Chin, 1998). The results of the confirmatory factor analysis showed that all item loading scores of each construct were above 0.7 and statistically significant at the 0.01 level. Moreover, the AVE scores of the constructs, which are higher than the recommended threshold (0.5), further confirm the convergent validity of our measurement model (Fornell and Larcker, 1981).

Second discriminant validity is inferred when the square root of each construct’s AVE is higher than the correlation of the construct with other latent variables (Chin, 1998; Henseler et al., 2009). The results in Table IV show that all diagonal values, the square roots of each latent variable’s AVE, were much higher than its correlations with other variables; this verified the discriminant validity of our measurement model. We further tested cross-loadings of the multiple items of

<table>
<thead>
<tr>
<th>Construct</th>
<th>Operationalisation</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived user base</td>
<td>A user’s perception about the number of people adopting an instant messaging service</td>
<td>Li et al. (2005); Wang et al. (2005)</td>
</tr>
<tr>
<td>Relationship commitment</td>
<td>A user’s desire to maintain relationships with buddies enrolled in the instant messaging service</td>
<td>Rusbult et al. (1998)</td>
</tr>
<tr>
<td>Perceived system quality</td>
<td>A user’s perception of the system quality regarding real-time communication and complementary functions of the instant messaging service</td>
<td>Liu and Arnett (2000)</td>
</tr>
<tr>
<td>Continuous usage intention</td>
<td>A user’s intention to continuously use the instant messaging service currently being used</td>
<td>Li et al. (2005); Wang et al. (2005)</td>
</tr>
</tbody>
</table>

Table II. Construct operationalisations and measurement sources
research constructs and found that each item's loading to its own latent construct was higher than its cross-loadings.

**Structural model assessment**

To evaluate our hypotheses, we developed an interaction model in accordance with the model proposed by Chin et al. (2003) and tested the path coefficients and their statistical significance using the bootstrapping technique. Interaction terms were calculated using the standardised latent scores of the social and technical factors. Figure 2 shows the analysis results of the research model.

All direct effects of the proposed social and technical factors on continuous usage were accepted at the 0.01 level of significance, while relationship commitment was the strongest antecedent of continuous usage intention. Therefore, $H1a$, $H1b$, and $H2$ were accepted. In addition, relationship commitment and system quality showed significant interaction effects at the 0.05 level of significance, while the interaction effect between perceived user base and system quality was not significant. Therefore, $H3b$ was accepted, but $H3a$ was rejected. Our model explained 32 per cent of the variance of users’ continuous usage intention.
Discussion

In this study we adopted the socio-technical perspective as a theoretical framework to determine whether relevant social and technical factors affect users' continuous usage intention in the context of instant messaging. Furthermore, drawing upon the social cognitive perspective, we proposed interaction mechanisms between the social and technical factors, i.e. the interaction process between users' cognitive structure on the social context surrounding a focal technology and the results of their appraisal of that technology. The results of our model analysis indicate that social factors (i.e. perceived user base and relationship commitment) and the technical factor (i.e. perceived system quality) significantly lead to continuous usage intention. These results correspond with the socio-technical perspective holding that both social and technical factors are crucial to successful IS usage. The findings indicate that developing of strategies to increase the user base and reinforce users' relationship commitment is a critical factor in the success of social software-based services.

With regard to interaction effects between the relevant social and technical factors, our analysis results demonstrate that only relationship commitment and perceived system quality exhibit a significant interaction effect. The finding regarding this positive interaction effect appears to be consistent with the arguments of the social cognitive perspective. A person’s appraisal result of a technology (i.e. high system quality) and cognitive structure on the technology’s social context (i.e. strong
commitment to his/her social relationship with other users) are intertwined in leading to an intention to continue using the technology. According to Cervone (2004) this interactive relationship is dependent on the maturity level of a person’s cognitive structure, which is the result of a gradual and continuous accumulation of appraisal results from encounters. Although having a mature cognitive structure can facilitate an individual’s appraisal process for a technology encounter, if the cognitive structure is not mature, the appraisal process can be constrained. It implies that when users are strongly committed to their buddies on an instant messaging service, users value the system quality of the instant messaging more, in a way that generates more positive attitudes toward its continuous use. Moreover the users’ appraisal outcomes can also underpin their cognitive structure (Cervone, 2004). In particular, when users perceive an instant messaging service to be of high quality, they can more readily maintain their relationships with buddies, and thereby develop a more profound intention to use instant messaging. Therefore this positive interaction between a user’s relationship commitment and perceived system quality results in greater continuous usage intention. For example NateOn, a dominant instant messaging service in South Korea, launched a “gifticon” service in 2006 as a complementary feature. Using the gifticon service, NateOn users can present a gift (e.g. a cup of coffee of Starbucks) to their buddies through NateOn. When a user sends a gift to a buddy using NateOn, the buddy receives a coupon with the sender’s messages on his/her cellphone or smartphone. Then the buddy can exchange the coupon for products or services at the designated shops (Lee, 2009). The price of a coupon ranges from 50 cents to US$250, and the types of gifts available for purchase include food, books, movie/performance/exhibition tickets, clothing, cosmetics, cultural items, and department store gift cards (SK Marketing and Company, 2009). By using this service users can express their goodwill to buddies with a small, real-world present. This technology-based service feature helps enhance users’ relationship commitment to their buddies, and thus results in increasing their intention to continuously use the instant messaging service (Lee, 2009). These findings imply that the technical functions of an instant messaging service should be designed to promote commitment among users, for example, by offering automatic reminders of their friends’ birthdays and other social events and integrating a chat function with these reminders, which facilitates continuous communication with the buddies.

The results also indicate, however, that there was no interaction effect between the perceived user base and perceived system quality, in contrast to what we had predicted. Although this inconsistent result calls for further investigation, we could find potential explanations from previous studies regarding the social aspects of IS. In the literature opportunity cost, “the value of the next best alternative foregone” (Vaughn, 1980, p. 705), has been discussed as an important consideration factor, particularly in the context of system adoption and upgrades (Mukherji et al., 2006). When users perceive that many people employ the same instant messaging service that they themselves use (i.e. high perceived user base), users comes to believe that it can provide more opportunities to communicate, not only with current friends but also with future friends. This will enhance users’ perceptions regarding the utility of the current instant messaging service. Moreover, when users switch to a different instant messaging service, they cannot communicate with their buddies using the new service unless the buddies also switch to it (i.e. loss of communication opportunities).
Therefore switching to other instant messaging services will entail a high opportunity cost, even though the alternative instant messaging service has high system quality. In this situation users may wish to continue using the current instant messaging service, even though its system quality does not meet their expectations. For this reason we might not be able to find an interaction effect between perceived user base and system quality.

When considering instant messaging’s essential purpose (i.e. interacting with others via online connections), this study’s findings are also valuable for other types of social software, such as virtual communities, blogs, and social networking services (SNS). In particular SNS, an emerging type of social software, is known to be more relationship-oriented (Lee et al., 2012). Thus the effect of relationship commitment on continuous usage intention may be more intensified in the context of SNS. Likewise its reciprocal interaction with technology attributes could be significant. The importance of relationship commitment has also been discussed in the group communication context (Rusbult et al., 1998), suggesting the importance of this social factor in virtual communities. Moreover the complex human network structures facilitated by these services require more diverse and extensive system features to enhance relationship commitment among users. Perceived user base might also have positive effects on other types of social software. Since SNS and virtual communities not only maintain existing relationships but also develop new ones, the potential growth of relationships facilitated by a large user base will be an important cognitive factor in making decisions for continuing or switching to other social groups or software. Likewise, search and recommendation features of these types of social software will be important technology factors to their users.

Although the findings of our study are both interesting and useful, they should be interpreted in light of the study’s limitations. First, the data in this study were collected within a specific geographical boundary (i.e. South Korea). Therefore, the findings could be affected by certain characteristics of this specific economy. With more data from different regional and cultural boundaries, the generalisability of the study could be enhanced. Second, a longitudinal study may prove to be a better approach for investigating success factors in user retention, while adopting continuous usage intentions as a proxy for actual continuous usage. Third the current study only considered the instant messaging type of social software. Further research into other types of social software, such as blogs and SNS, should prove helpful in generalising our findings and also in understanding the characteristics of each type of social software. In line with this, we also want to note that there might be different phenomena related to other types of social software, such as more information-oriented ones such as wikis and social bookmarking.

**Conclusion**

User retention is one of the major success factors of the social software-based business. This study investigated the driving forces of users’ continuous usage intention toward a specific type of social software (i.e. instant messaging). Drawing upon the socio-technical perspective, this study investigated the direct effects of social (i.e. perceived user base and relationship commitment) and technical (i.e. perceived system quality) factors on continuous usage intentions. Adopting the social cognitive
perspective, furthermore, this study investigated interactions between the relevant social and technical factors.

Regardless of the aforementioned limitations, our study makes several significant contributions to the social software literature. First, this study provides a new theoretical and empirical explanation of continuous usage intention in the context of social software. Social software is regarded as an interactive system among users, the social environment, and technology (Whitworth and Moor, 2003; Farkas, 2007). Our research model includes these primary components of social software, as well as the interactional relationships among these components. Second, this study proposed interaction mechanisms between the social and technical factors, which have seldom been discussed in previous socio-technical studies. For this, we adopted the social cognitive perspective to augment the traditional socio-technical perspective. Drawing upon the social cognitive perspective, we proposed interactions and learning processes among users’ cognitive structures on the focal system and the given social context (Cervone, 2004; LaRose, 2009). Our research model provides a novel and comprehensive theoretical view regarding social software usage behaviour. Third, this study provides empirical evidence regarding the significant interactional relationship between the relationship commitment and perceived system quality of an instant messaging user. This empirical support of our theory should prove useful to both academics studying the socio-technical perspective and practitioners attempting to develop strategies for social software businesses. Finally, our explanation for the inconsistent finding (i.e. opportunity costs with large user-based social software) calls for further theoretical and empirical efforts to explain the various types of interactions between social and technological factors surrounding different types of social software. Wade and Hulland (2004) proposed three distinctive types of interactions or complementing relationships between information technologies and other factors: enhancing, suppressing, and compensatory interactions. An enhancing interaction refers to the extent that the information technology “magnifies the effect of one resource in the presence of the other”, while a suppressing interaction occurs “where the presence of one diminishes the impact of the other” and compensatory interaction refers to the “offsetting of positive change of one resource by the opposite change in other” (Wade and Hulland, 2004, p. 123). In our case the relationship between relationship commitment and perceived system quality can be viewed as an enhancing interaction, while, according to the opportunity cost perspective, the relationship between perceived user base and perceived system quality may be viewed as a suppressing interaction. When considering the current lack of investigation of interaction effects between social and technological factors, our findings (both consistent and inconsistent with the proposed model) may serve as a base for future investigation of such types of interactions to further understand the complicated aspects relevant to the success of social software.

This study’s findings also may have some benefits for instant messaging service providers. Our results indicate that social factors have a greater impact on users’ continuous usage intention than technical factors in the social software context. Moreover, the social factor (i.e. relationship commitment) has a positive interaction relationship with the perceived value of the technology attributes. Therefore, service designers or providers should make an effort to nurture social relationships among users, expand users’ social networks, and reinforce users’ relationship commitment to their friends.
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Usage of social software


**Appendix. Survey items**

The meaning of "my IM" or "the IM that I use" is the instant messaging service that you mostly use to communicate with your friends, family, colleagues, or other acquaintances.

**Perceived user base**

PUB1: The number of my IM’s users is large.

PUB2: Many internet users use the same IM that I use.

PUB3: Many (or a large percentage) of my buddies (e.g. friends, family, colleagues, other acquaintances) use the same IM that I use.

PUB4: Many people in the groups which I belong to use the same IM that I use.

**Relationship commitment**

RC1: I am committed to maintaining relationships with the people in my IM’s buddy list.

RC2: I feel attached to my relationships with the people in my IM’s buddy list.

RC3: I am oriented toward the long-term future of my relationships with the people in my IM’s buddy list.

**System quality**

SQ1. The communication functions (i.e. text, audio, and video chatting) of my IM have a quick response time.

SQ2. The communication functions of my IM work reliably.
SQ3. The communication functions of my IM are easy to use.

SQ4. The complementary services (e.g. news, search engine, music, game, weather, etc.) of my IM have a quick response time.

SQ5. The complementary services of my IM work reliably.

SQ6. The complementary services of my IM are easy to use.

Continuous usage intention

CUI1. I intend to continue using my IM in the future.

CUI2. Given that I have a computer with the IM that I use, I predict that I will use it.

CUI3. If I have to temporarily use a computer that does not have the same IM that I use, I intend to download and install it for my continuous use.

CUI4. I expect the use of my IM to continue in the future.

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