

Understanding Chinese users' continuance intention toward online social networks: an integrative theoretical model

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Abstract This study explores users' continuance intention in online social networks by synthesizing Bhattacharjee's IS continuance theory with flow theory, social capital theory, and the unified theory of acceptance and use of technology (UTAUT) to consider the special hedonic, social and utilitarian factors in the online social network environment. The integrated model was empirically tested with 320 online social network users in China. The results indicated that continuance intention was explained substantially by all hypothesized antecedents

including perceived enjoyment, perceived usefulness, usage satisfaction, effort expectancy, social influence, tie strength, shared norms and trust. Based on the research findings, we offer discussions of both theoretical and practical implications.

Keywords Online social network · Continuance intention · IS continuance theory · Flow theory · UTAUT · Social capital theory

JEL classification M19 - Other

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Introduction

Online social network sites (SNS) have increasingly become integrated into people's daily lives and have rapidly developed into an important social platform for communication (Boyd and Ellison 2008; Powell 2009). Online SNS represent a cyberspace where individual users can maintain their profile, link other users, share information, images and photos with each other, and also conduct social activities with other users (Boyd and Ellison 2008; Powell 2009). According to a Nielsen report, two-thirds of the world's Internet population visit a social network or blogging site and the sector accounted for almost 10 % of all Internet time in 2008 (Nielsen 2009). Such use is growing as evidenced by the growth of online SNS usage. For example, online SNS users grow 18 % between December 2007 and December 2008 (Nielsen 2009). Despite the exponential growth in this industry, the study of the psychological process of SNS continuance usage is still in its infancy (Kwon and Wen 2010). Thus, an important research question for both industry and academia has naturally arisen: Why do online SNS users continue to use these websites?

Understanding the reasons for users' continuance in the use of an information system (IS) is critical for the long-term viability and the eventual success of the IS (Bhattacharjee 2001a). Although there are several previous studies on IS

continuance in other online contexts, e.g., consumer online buying (Liao et al. 2010), online SNS differs from other online IS in that it enables users to visibly articulate their social network and allows users to enjoy the online social activity voluntarily (Boyd and Ellison 2008). There are only very few studies examining online SNS users' continuance. For example, Kim (2011) examined this phenomena in Korea and Sledgianowski and Kulviwat (2009) investigated this phenomena in the US, where the IS industry is extremely developed. This study focuses on the phenomena in China where the IS industry is relatively developing and aims to identify the potential differences. Shi et al. (2010) also examined online SNS continuance usage by employing the EDT, the foundation of the IS continuance theory, and suggested extending the EDT by integrating it with other theories in future research. In addition, previous studies pointed out that user's perceived enjoyment is a significant intrinsic motivator of online SNS continuance, user's social capital drives their online SNS continuance and online SNS user's acceptance contributes to their continuance (e.g., Hu and Kettinger 2008; Kwon and Wen 2010). However, little attention has been paid to integrating these critical factors together in building user's continuance intention to online SNS. Therefore, this paper attempts to synthesize IS continuance theory as a base with flow theory, social capital theory and the unified theory of acceptance and use of technology (UTAUT) to systematically assess the critical influential factors of online SNS users' continuance. These critical factors in our model offer a unique combination, which have not been combined previously. The result of this study could be used by online SNS providers to enhance their service.

Literature review and hypothesis development

Our base model is Bhattacharjee's IS continuance theory because of its reputation in accurately explaining users' general continuance intention toward IT artifacts (Bhattacharjee 2001a). However, this theory did not consider the special hedonic, social and utilitarian factors in the online social network environment (Boyd and Ellison 2008). Hence, we employ flow theory (Csikszentmihalyi 1977), social capital theory (Nahapiet and Ghoshal 1998; Putnam et al. 1993) and the unified theory of acceptance and use of technology (Venkatesh et al. 2003) to integrate the hedonic, social and utilitarian factors into the IS continuance theory.

IS continuance theory

Based on expectation-confirmation theory (ECT), Bhattacharjee established the IS continuance theory which ascertained that user's satisfaction and perceived usefulness are two basic and pivotal predictors of IS usage continuance (Bhattacharjee 2001a). Furthermore, the theory postulates user perceived

usefulness of IT as having a positive effect on satisfaction with IT (Bhattacharjee 2001a). Satisfaction is defined as "an overall psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience" (Oliver 1981). Users who were more satisfied with their experience of online SNS would have a higher level of continuance intention (Shi et al. 2010). Perceived usefulness, which was first conceptualized and validated by Davis et al. (1989) in the IS research field, is also referred to as performance expectancy in the unified theory of acceptance and use of technology (Venkatesh et al. 2003). It is defined as the degree to which an individual believes that using the system will help him or her to attain gains (Venkatesh et al. 2003). If the individual user feels that an information system is useful, he or she will think positively about it (Davis et al. 1989; Davis et al. 1992; Sledgianowski and Kulviwat 2009; Venkatesh et al. 2003). Online social network users sense usefulness since they can get information and knowledge from other users or the SNS system service, and they can connect with others and know more people through the SNS system (Kwon and Wen 2010). Some previous studies gave evidence that SNS users' usefulness perception can positively influence their intention to use the system and their satisfaction with online SNS (Kang and Lee 2010; Kwon and Wen 2010; Lin and Lu 2011; Sledgianowski and Kulviwat 2009). Furthermore, studies on post-adoption behaviours have verified the IS continuance theory in the online context, e.g., the online brokerage context (Bhattacharjee 2001b) and internet-based learning context (Limayem and Cheung 2008). Considering the strong theoretical foundation and robust empirical results, we employ IS continuance theory as the base research model. Accordingly, we hypothesize as follows:

- H1: Users' satisfaction with online SNS use positively influences their continuance intention.
- H2: Users' perceived usefulness of online SNS use positively influences their satisfaction with online SNS.
- H3: Users' perceived usefulness of online SNS use positively influences their continuance intention.

Flow theory

Csikszentmihalyi's flow theory ascertains that people seek a flow experience primarily for themselves and will feel a decrease of self-consciousness when gaining hedonic experience (Csikszentmihalyi 1977). Researchers have adapted this theory into the IS field and pointed out that perceived enjoyment is a key characteristic of the flow experience (Davis et al. 1992; van der Heijden 2004). Perceived enjoyment refers to the extent to which the activity of using the online SNS is perceived as being enjoyable in its own right, apart from any performance consequences that may be

anticipated (Davis et al. 1992). van der Heijden (2004) further pointed out that perceived enjoyment is an important predictor of the users' intention to use a hedonic-oriented information system. Many scholars have argued that an online SNS is a pleasure-oriented hedonic information system, where users have a stronger motivation to continue using it if they perceive more intense enjoyment from it (Kang and Lee 2010; Lin and Lu 2011; Sledgianowski and Kulviwat 2009). In an online SNS, users can play online games with their friends, express themselves by uploading photos and writing blogs, interact with friends through embedded instant messaging, or explore other people's profiles, and so on (Boyd and Ellison 2008). They can, thus, temporarily escape from their mundane world and immerse themselves in the online SNS (Venkatesh and Brown 2001), consequently developing user satisfaction vis-à-vis the online SNS (Davis et al. 1992) which in turn has an influence on user continuance intentions (van der Heijden 2004). Taken together, users' online SNS satisfaction and continuance intention may be influenced by their level of perceived enjoyment. Thus, the hypotheses are derived as follows:

- H4: Users' perceived enjoyment of online SNS use positively influences their satisfaction with online SNS.
 H5: Users' perceived enjoyment of online SNS use positively influences their continuance intention.

Social capital theory

Nahapiet and Ghoshal (1998) define social capital as "The sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit". Online social networks provide a typical environment for the capital to be mobilized through the network, offering shared norms (cognitive dimension), trust (relational dimension), and tie strength (structural dimension), three key aspects of social capital (He et al. 2009; Putnam et al. 1993). Shared norms represent a degree of consensus in the social system and reflect the commonalities among online SNS users (Coleman 1990). Shared norms shape online SNS users' thinking and behavior, and evolve into stronger communication and interaction among online SNS users (He et al. 2009). Therefore, shared norms generate propositional attitudes that positively affect the users' satisfaction toward online SNS and their online SNS continuance intention.

Trust is a multidimensional construct and has been defined in many different ways (Gefen et al. 2003; Mayer et al. 1995; McKnight et al. 2002). Trust here is conceptualized as generalized trust, which refers to the belief in good intent, competence, and reliability of other online SNS users regarding their activities and of the online social network platform service provider (Dinev and Hart 2006; Mishra 1996). Some scholars advocated one of the most appealing features of an SNS is its ability to build trusted relationships among the users (e.g. Lin

and Lu 2011), and some other scholars emphasized the importance of the SNS users' trust on online social network platform service provider (e.g. Sledgianowski and Kulviwat 2009). Our study concerned the trust that users have toward both the other users and the online social network platform service provider. When the users trust other users and the online SNS service provider, they will increase satisfaction and be intrinsically motivated to continue using that SNS (Deng et al. 2010; Sledgianowski and Kulviwat 2009).

Tie strength, a concept ranging from weak ties at one extreme to strong ties at the other, represents the extent and frequency of the interaction and the closeness between ego user and other online SNS members (Granovetter 1973; Levin and Cross 2004). Strong ties characterize the closeness and frequent interaction of a relationship between two users in an online SNS, and plays the salient role of facilitating the knowledge sharing (Levin and Cross 2004) and effective communication (Reagans and McEvily 2003). While weak ties characterize distant and infrequent relationships, and is more likely to be the source of novel information or new ideas (Granovetter 1973; Levin and Cross 2004). In an online SNS usage context, stronger relationships can usually encourage users to keep the communication and interaction with other users more frequently and extensively via online SNS, and hence are important to users' continuance intention toward the online SNS (He et al. 2009; Levin and Cross 2004). Thus it is expected that users' intention to continue using online SNS increase when they have higher level tie strength.

Summarizing the above arguments, we propose the following hypotheses:

- H6: Users' shared norms of online SNS use positively influence their satisfaction with online SNS.
 H7: Users' shared norms of online SNS use positively influence their online SNS continuance intention.
 H8: Users' trust of online SNS use positively influences their satisfaction with online SNS.
 H9: Users' trust of online SNS use positively influences their online SNS continuance intention.
 H10: Users' tie strength in online SNS positively influences their online SNS continuance intention.

The unified theory of acceptance and use of technology (UTAUT)

UTAUT, so far considered to be the most comprehensive IT adoption theory, posits constructs of effort expectancy (similar to perceived ease of use), performance expectancy (similar to perceived usefulness), social influence (similar to subjective user norms), and facilitating conditions as the antecedents of the user's behavioural intention (Venkatesh et al. 2003). Since facilitating conditions have not been found to directly and significantly affect behavioural intention in UTAUT, we adopt

the other three constructs in our study as are typical of other follow up studies (e.g., Loebecke et al. 2010). Performance expectancy, similar to perceived usefulness, has been considered in the previously mentioned IS continuance theory section. Effort expectancy is the degree of ease associated with the use of the online SNS by individual users (Venkatesh et al. 2003). Online SNS users' continuance intention could be discouraged and their usefulness perception would be reduced when users perceive high levels of effort as being required for online social activities (Butler 2001; Kwon and Wen 2010). Thus we expect that the users' perceived usefulness and continuance intention toward an SNS could be affected by the users' effort expectancy of using the service. Social influence is defined as the degree to which an individual perceives that important others believe he or she should use online SNS (Venkatesh et al. 2003). Users' continuance intention to use SNS intensifies and their usefulness perception enhances when users perceive their friends' or relatives' usage pressure and they anticipate more friends or relatives using the SNS in the future (Baker and White 2010; Venkatesh and Bala 2008). Thus it is expected that the users' perceived usefulness of and continuance intention toward an SNS could be affected by the users' social influence of using the service. Based on the above reasons, we propose as follows:

- H11: Users' effort expectancy of online SNS use positively influences their perceived usefulness of online SNS use.
- H12: Users' effort expectancy of online SNS use positively influences their online SNS continuance intention.
- H13: Users' social influence of online SNS use positively influences their perceived usefulness of online SNS use.

H14: Users' social influence of online SNS use positively influences their online SNS continuance intention.

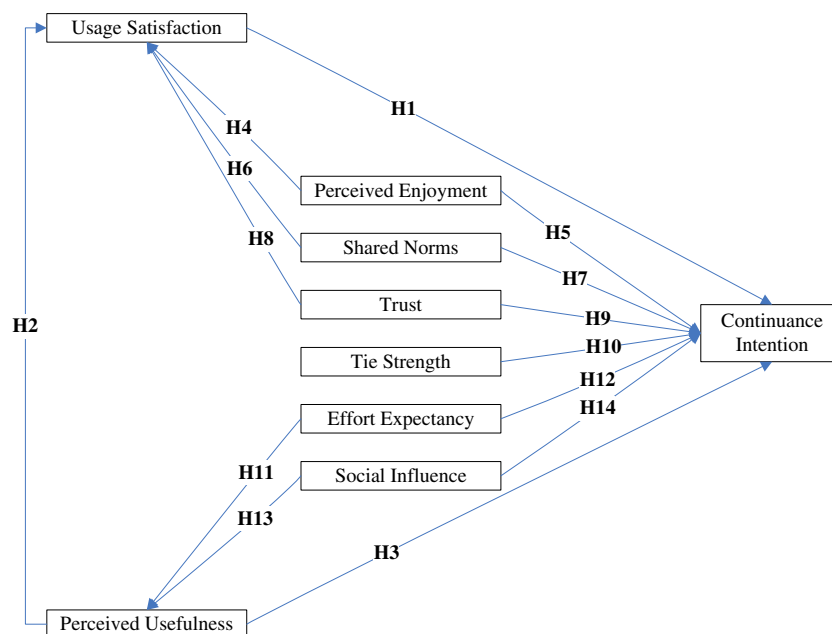
Based on the above literature review and the subsequent development of hypotheses, the research model has been developed as depicted in Fig. 1. The SNS continuance intention is determined by critical influence factors integrated from IS continuance theory, flow theory, social capital theory, and the unified theory of acceptance and use of technology (UTAUT).

Methodology

Subjects

To test the proposed research model, we conducted a survey of online Chinese SNS users who used the popular social network websites including Facebook.com, Myspace.com, Xiaonei.com (which has used Renren.com as a new domain since the 4th of August 2009), kaixin001.com, and 51.com. Within China, people cannot visit Facebook.com. However, there are some overseas Chinese users of Facebook.com, e.g. Chinese users in Singapore. Considering the popularity of Facebook and Myspace in the world, we have included them in our survey. Renren.com, kaixin001.com, and 51.com are three popular Chinese domestic online SNS. These Chinese SNS have special characteristics in contrast to Facebook and Myspace. All these Chinese online SNS receive their main incomes by attracting and keeping users playing different kinds of social games, whereas Facebook primarily makes money by displaying adverts via its advertising system. Furthermore, Facebook implements search-

Fig. 1 Research model



based advertising as the basic format, while Chinese online SNS typically use social and banner advertising. Another feature of Chinese online SNS is that they provide more offline activities to attract people to join online compared to Facebook and Myspace.

Online questionnaires were created using a professional online questionnaire service. We checked respondents' identities via their e-mail and IP addresses to avoid potential replications. A prize draw was used to encourage the participation of the respondents. In total, 352 users responded and 320 filled in the entire questionnaire instrument. Of the respondents, 145 (45.3 %) were female and 175 (54.7 %) were male. Seventy one percent of the respondents were 20 to 29 years old, indicating the relatively young online SNS user group in China at the time the survey was conducted. In terms of profession, about 78 % of the respondents were university students. In addition, about half of the respondents used online SNS services every day. Finally, we attempted an estimation of the non-response bias by comparing responses from early-completing versus late-completing respondents, and the result revealed no significant difference between the two groups. This indicated that our sample was not influenced to any substantial degree by a non-response bias.

Construct operationalization

All instruments were adapted from previously published research. Constructs were measured via a multiple-item, seven-point Likert or semantic differential scales, and then were refined by expert judges and in a pilot test. A back-translation between Chinese and English versions was employed to ensure an appropriate translation. In the final version of the questionnaire, we randomly sequenced all

items to reduce potential ceiling (or floor) effects as well as order effects that can lead to a response bias of subjects.

We measured continuance intention with three items and satisfaction with four items (from Bhattacharjee 2001a). Perceived usefulness was assessed using four items (from Davis 1989; Kwon and Wen 2010; Venkatesh et al. 2003). Perceived enjoyment was measured with three items (adapted from Davis et al. 1992). Effort expectancy used four items (developed from the studies of Kwon and Wen 2010; Venkatesh et al. 2003), whilst social influence included four items (extended from Venkatesh et al 2003). Three items were employed to measure (based on Dinev and Hart 2006; Mishra 1996). Shared norm was assessed using three items (Coleman 1990; Tsai and Ghoshal 1998). Tie strength used three items (modified from Levin and Cross 2004) by embedding the feature of the online SNS into the items. All items, organized by constructs, are listed in the Appendix.

Data analysis and results

The empirical data was analyzed in PLS Graph 3.00 via the Partial Least Squares (PLS) technique in two stages. In the first stage, all measurement scales were examined for their psychometric properties. Subsequently, hypotheses testing and model analyses were performed in the second stage. Raw data was used as input to the PLS program, and path significances were estimated using bootstrapping.

We evaluated the reliability, convergent validity and discriminant validity of all our measurement scales in the first stage. As shown in Table 1, all Cronbach's Alpha coefficients exceeded 0.70 and composite reliability exceeded 0.80, indicating good reliability for our measurement scales (Nunnally 1978). In addition, square roots of the average variance

Table 1 Scale properties

Construct ^a	Mean	S.D.	Cronbach Alpha	Composite Reliability	Inter-construct correlations ^b												
					PU	US	PE	T	SN	TS	EE	SI	CI				
PU	5.24	0.66	0.91	0.93	0.87												
US	4.80	1.11	0.89	0.92	0.38	0.86											
PE	5.77	0.70	0.88	0.93	0.56	0.34	0.90										
T	5.64	0.67	0.77	0.87	0.27	0.29	0.27	0.83									
SN	5.18	0.69	0.75	0.86	0.29	0.27	0.33	0.23	0.82								
TS	5.20	0.55	0.75	0.85	0.39	0.31	0.33	0.26	0.31	0.81							
EE	5.01	0.71	0.82	0.88	0.41	0.25	0.38	0.26	0.33	0.26	0.80						
SI	5.46	0.51	0.84	0.89	0.44	0.40	0.50	0.31	0.43	0.43	0.37	0.82					
CI	5.26	1.22	0.91	0.94	0.54	0.46	0.56	0.36	0.42	0.46	0.43	0.53	0.92				

^a PU Perceived Usefulness; US Usage Satisfaction; PE Perceived Enjoyment; T Trust; SN Shared Norms; TS Tie Strength; EE Effort Expectancy; SI Social Influence; CI Continuance Intention

^b Diagonal elements represent the square root of AVE for that construct

extracted (AVE) from principal diagonal elements of Table 1 exceeded 0.71, i.e., their AVE values exceeded .50, and factor loadings of all items were significantly higher than .70 at $p < 0.001$. Thus, convergent validity is strong (Fornell and Larcker 1981). Finally, the square root of AVE from principal diagonal elements of the table exceeded the bivariate correlations between that construct and all other constructs, demonstrating adequate discriminant validity (Fornell and Larcker 1981).

We examined the path magnitude of each of our hypothesized effects and their significance, and the overall explanatory power of the proposed model in the second stage. Figure 2 presents the result of the analysis, indicating that all of the hypotheses were supported at the significance level of 0.01 and that 52.9 % of the variance in continuance intention to use the online SNS was explained by the eight critical influencing factors. Specifically, the effect of usage satisfaction on continuance intention ($\beta = 0.15$, $p < 0.01$) was significant, validating H1. Perceived usefulness was found to affect usage satisfaction ($\beta = 0.22$, $p < 0.01$) and continuance intention ($\beta = 0.15$, $p < 0.01$) positively, supporting H2 and H3. Perceived enjoyment was found to affect continuance intention ($\beta = 0.22$, $p < 0.01$) and usage satisfaction ($\beta = 0.12$, $p < 0.01$) positively, lending support to H5 and H4. Similarly, shared norms had significant effects on usage satisfaction ($\beta = 0.13$, $p < 0.01$) and on continuance intention ($\beta = 0.12$, $p < 0.01$), supporting H6 and H7 respectively. In addition, trust had a significant positive effect ($\beta = 0.17$, $p < 0.01$) and a relatively weaker but significant positive effect on continuance intention ($\beta = 0.09$, $p < 0.01$), providing support for H8 and H9. As hypothesized, tie strength significantly influenced continuance intention ($\beta = 0.14$, $p < 0.01$), giving support for H10. Finally, the role of effort expectancy and

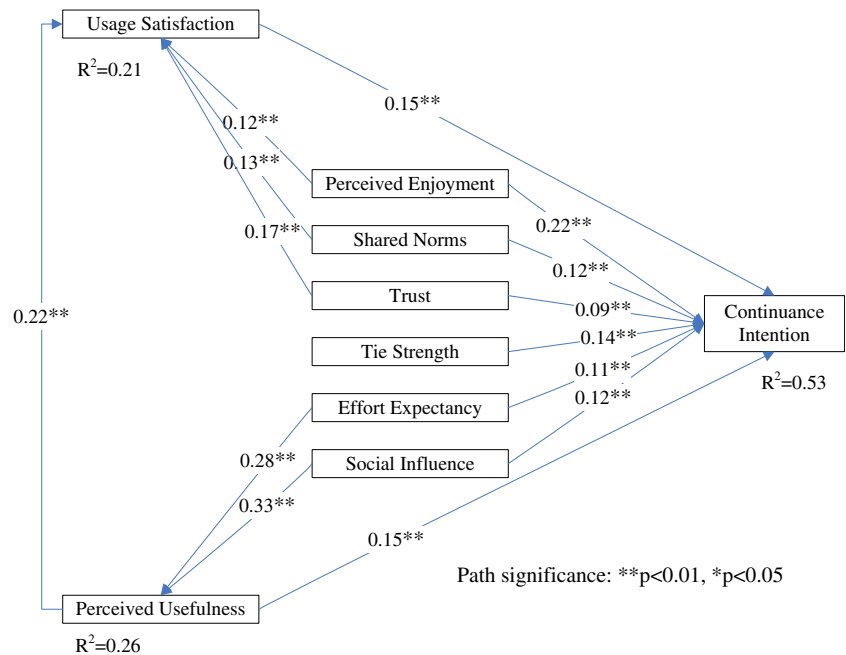
social influence in the online SNS were demonstrated. Both effort expectancy ($\beta = 0.11$, $p < 0.01$) and social influence ($\beta = 0.12$, $p < 0.01$) were significant predictors of continuance intention, therefore, H12 and H14 were supported. Furthermore, effort expectancy ($\beta = 0.28$, $p < 0.01$) and social influence ($\beta = 0.33$, $p < 0.01$) significantly affected perceived usefulness, validating H11 and H13. The variance explained for the dependent variable was substantial, indicating strong predictive power of the proposed model.

Discussion

The PLS results have confirmed that the integration of flow theory, social capital theory and UTAUT into Bhattacharjee's IS continuance theory provides better insights into understanding online SNS continuance intention. The research found that perceived usefulness, usage satisfaction, perceived enjoyment, effort expectancy, social influence, trust, shared norms and tie strength all play an important role in explaining why people continue to use SNS.

Considering both the direct effect ($\beta = 0.22$) and indirect effect ($\beta = 0.02$), perceived enjoyment plays the most important role in influencing the online SNS users' continuance intention. Prior studies have found perceived enjoyment is more important than perceived usefulness as a salient antecedent of IS usage in hedonic information systems usage since users focus on using the fun-aspect of such information systems (e.g. Lin and Lu 2011; van der Heijden 2004). This study not only confirms this finding but also reveals that perceived enjoyment is more important than other critical antecedents of users' continuance intention in online

Fig. 2 Results of structural model analysis



social networks, including usage satisfaction, effort expectancy, social influence, tie strength, shared norms and trust. Therefore, building an enjoyable environment for interaction for pleasure-oriented online SNS should be the most effective choice to maintain users' continuance usage. This finding suggests that online SNS service providers should firstly focus on devising hedonic features (e.g., enjoyable applications or games) to fulfil the hedonic needs of the users so as to strengthen users' active system use.

In line with Bhattacherjee's IS continuance theory, usage satisfaction has a strong direct impact on continuance intention toward online SNS, whereas perceived usefulness exerts a strong direct and indirect impact via users' satisfaction (Bhattacherjee 2001a). Obviously, satisfaction and usefulness provide a fundamental and necessary capability to keep users. Therefore, it is warranted to include satisfaction and usefulness in predicting IT continuance. A previous study found that user satisfaction with a SNS is not associated with SNS continuance intention when only employing a single SNS site (i.e. Cyworld) user sample in Korea (Kim 2011). Our study containing samples of users of five SNS confirms their expectation that the association will be positively significant when employing multiple SNS user samples in concert. Hence, online SNS service providers should aim to satisfy users' expectations to fulfil users' satisfaction in all possible ways, for example, continually creating new, exciting or interesting system features to exceed users' expectations (Bhattacherjee 2001a). Perceived usefulness has a relatively weaker impact compared to perceived enjoyment in hedonic-oriented systems such as SNS (van der Heijden 2004), emphasizing the utilitarian benefits is still important. Service providers could build some embedded tools (e.g., information or knowledge rating systems) to facilitate users' online social activities and obtain useful information and knowledge.

Online social networks provide a unique platform to allow the user to draw on resources of other members and from interaction with other members, thus social capital is mobilized among network members (Helliwell and Putnam 2004). The results show strong support for the influence of the social capital factors including tie strength, shared norms, and trust on usage continuance in the online social network context, echoing the importance of taking into account the unique characteristics of the IT artifact (Benbasat and Zmud 2003). Therefore, online SNS providers may establish some personalized incentive mechanisms according to users' different needs in different phases to facilitate the establishment and mobilization of the resources within the network (Vassileva 2012). In addition, a more convenient and flexible interaction channel to facilitate strong relationships among the users should be devised in the online SNS platform. In order to allow shared norms to shape users' active usage of the online SNS, online SNS service providers may furnish tools to let users find commonalities among members: for example,

setting up common interest groups to let users join. Given the importance of trust among the social network, the online SNS service providers may also develop detailed rules and regulations to standardize online social activity and can also monitor and manage the user activity (e.g., giving some violation reminders), but not at expense of invading the users' privacy.

Effort expectancy is related to the interaction design of the online SNS, which aims to improve human-computer interaction and mitigate the users' effort in using the information system (Sharp et al. 2007). The significant impact of effort expectancy on users' continuance usage implies that online SNS service providers should design the system to be easy of use: for example, making navigation and menu structure more intuitive to let users access different functions easily. Naturally, users will be influenced by their salient referents, indicating the impact of social influence on users to continue to use the system. Online SNS providers should pay attention to and try to benefit from this word-of-mouth phenomenon (Lin and Bhattacherjee 2008). The small impact of social influence found in this study is different from the research results of Sledgianowski and Kulviwat (2009). Their study was conducted in the North American context and the path coefficient was found to be significantly negative. The different results may be due to the complex nature of social influence, which decreases when users have more SNS usage experience (Venkatesh et al. 2003). Also, some SNS users may receive dissuasive influence from others, such as their parents intervening to prevent their children becoming addicted to SNS usage.

Conclusion

This study proposes a comprehensive theoretical framework by integrating IS continuance theory, flow theory, UTUAT, and social capital theory to investigate the influencing factors of users' SNS continuance usage. The results exhibit good explanatory power to predict the users' SNS continuance usage.

Despite the valuable findings from this study, there are some limitations. These limitations indicate avenues for further research. First, the subject was Chinese online SNS users in this study, hence, caution must be considered when generalizing our findings to other countries. We suggest that this study might be tested in a Western country in order to compare the results across different cultures. Second, this study only conducted cross-sectional research by capturing data at one time point, so future studies should aim to conduct longitudinal studies to investigate the dynamic and complex post-adoption online SNS usage behaviour. Third, this study collected data only by virtue of an online questionnaire and thus it does not provide in-depth information on continuance usage behaviour. Qualitative interview

methods could be used in future research to complement the quantitative research methods and capture insightful, detailed information. In addition, we only explored the main effect of the identified users' continuance intention factors. Future studies could conduct an exploration of interactions among these factors to further understand the complex nomological influence path. Despite the above mentioned concerns, we believe our integrated model can serve as a good starting point to investigate the online SNS users' continuance intention. We hope that the study will encourage other researchers to conduct research in this very new area of investigation.

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Appendix

Continuance intention (CI)

1. I intend to continue using online social network sites rather than discontinue use.
2. My intentions are to continue using online social network sites than use any alternative means.
3. If I could, I would like to discontinue my use of online social network sites (reverse coded).

Usage satisfaction (US)

How do you feel about your over experience with online social network sites use?

1. Very dissatisfied/Very satisfied
2. Very displeased/Very pleased
3. Very frustrated/Very contented
4. Absolutely terrible/Absolutely delighted

Perceived usefulness (PU)

1. Using online social network sites improves my efficiency in sharing information and connecting with others.

2. Using online social network sites enables me acquire more information or meet more people.
3. The online social network sites are a useful service for communication.
4. The online social network sites are a useful service for interaction of members.

Perceived enjoyment (PE)

1. Using online social network sites provides me with a lot of enjoyment.
2. I have fun using online social network sites.
3. Using online social network sites provides me with pleasure.

Effort expectancy (EE)

1. My interaction with the online social network sites is clear and understandable.
2. It is easy for me to become skillful at using the online social network sites.
3. I find the online social network sites easy to use.
4. Learning to operate the online social network sites is easy for me.

Social influence (SI)

1. People who influence my behavior think that I should use the online social network sites.
2. People who are important to me think that I should use the online social network sites.
3. People whose opinions I value prefer me to use the online social network sites.
4. People I look up to expect me to use the online social network sites.

Trust (T)

1. Online social network sites are safe environments in which to exchange information with others.
2. Online social network sites are reliable environments in which to conduct their activities.
3. Online social network sites handle personal information submitted by users in a competent fashion.

Shared norm (SN)

1. Online social network sites users I know share the same ambitions and vision with me.
2. Users I know in online social network sites are enthusiastic about pursuing the collective goal.
3. There is a norm of openness to conflicting views in the online social network sites.

Tie strength (TS)

1. How close is your relationship with each user in online social network sites? (1 = distant; 4 = somewhat close; 7 = very close)
2. How often do you communicate with each other in online social network sites? (1 = once every 3 months or less; 2 = once every 2nd month; 3 = once a month; 4 = twice a month; 5 = once a week; 6 = twice a week; 7 = daily)
3. To what extent do you typically interact with each person? (1 = to no extent; 4 = to some extent; 7 = to a very great extent)

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