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Wuhan International Conference on e-Business

Summer 5-25-2013

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Abstract: IS continuance is important for IS providers to increase both their revenues and profits, and to achieve success. With the penetration of SNS into people' lives, SNS has attracted the attentions of IS researchers and become a hot topic. This study develops a model to explore the factors determining individuals' continuous intention and use of SNS. Based on 221 useful questionnaires, the research model is empirically tested together with a number of hypotheses. The results show that satisfaction together with perceived usefulness, perceived playfulness and social influence positively impact users' continuance intention. Continuance intention and satisfaction are found to have positive influences on users' continuous use of SNS, and continuous intention exerts a stronger influence on continuous use than satisfaction. The implications to theories and practice are discussed as well.

Keywords: SNS, IS continuance, satisfaction, social influence, motivation theory

1. INTRODUCTION

There has been an amazing growth of social network sites (SNS) in the past several years. SNS has penetrated into people's daily life and become an important social communication platform [1]. SNS is defined as virtual collections of user profiles, which can be shared with others [2]. It is argued to be a new method of communication by employing computer as a collaborative tool, which has resulted in a profound change in interpersonal interaction in computer-mediated communication [3] [4]. For instance, SNS allows people to present their profiles, to share information, to present themselves, to establish new social relationships as well as to keep extant social relationships [4]. The popularity and prominence of SNS in the modern society has immensely attracted more and more individual users, and the network of users expands quickly as well. We have witnessed the success of Facebook, Friendster, and MySpace in the past several years. For instance, in 2011, Facebook has more than 500 million active users.

In China, there is also a major growth of SNS, such as Qzone (190 million active users), Renren (96 million) and Pengyou (80 million). According to a report released by China Internet Network Information Center (CNNIC), until end of 2011, the SNS user population in China has already arrived at 244 million [5]. Apparently SNS is also growing rapidly in China, and millions of citizens, the young generations in particular, are engaged in SNS.

Despite the importance of SNS in China, research on Chinese SNS is relatively thin from both the academic and practical standpoints. Also, few studies have been located to examine the factors influencing

individuals' actual use/continuous use behavior in the context of SNS. Prior research has tried to investigate the factors affecting individuals' intention to use SNS, but not their actual usage behavior yet. This study aims at investigating individuals' continuance use of SNS in the context of China. As Bhattacherjee [6] argued that initial adoption of IS is merely an important first step toward IS success, and continued IS usage plays a critical role in IS success. In addition, acquiring a new customer may cost as much as fives time more than retaining an extant customer [7]. Hence, it is imperative to investigate the driving factors of SNS continuance with both academic and industry significance.

The remainder of the paper is structured as follows: in Section 2 the theoretical reviews and the research basis are presented. Section 3 describes the study design and research methodology. Section 4 discusses the findings of the current study, and section 5 concludes this research. Finally, the limitations of this study and the implications for future research are pointed out.

2. THEORETICAL BACKGROUND

2.1 Motivation theory

A significant body of research has used the motivation theory to explain individuals' behavior of accepting information technology. According to Deci [8], the motivations underlying individuals' behavior can be divided into two types of motivations, namely extrinsic motivation and intrinsic motivation. Extrinsic motivation refers to "doing something because it leads to a separable outcome" [9], whereas intrinsic motivation is defined as "doing an activity for the inherent satisfaction of the activity itself" [10]. Intrinsic motivation is derived from the interest in the action itself rather than external reinforcement, and extrinsic motivation is derived from the outcome of the action rather than the action itself [10]. Davis et al. [10] found that both intrinsic (perceived enjoyment) and extrinsic (perceived usefulness) motivations are the factors affecting individuals' use of information systems. Later research has validated the findings of Davis et al. [10] in different research contexts [11] - [13]. Prior research also found that extrinsic motivation is the key determinant of utilitarian systems use, and intrinsic motivation is a strong predictor of hedonic systems use. SNS can be regarded as a multi-purpose IS since it offers both utilitarian (such as establish or maintain social relationships) and hedonic (enjoyment in using SNS) value to individual uses. Based on these reasons, in this research both extrinsic (usefulness) and intrinsic benefits (playfulness) are hypothesized as the predictors for individuals' use of SNS.

2.2 Proposed research model and hypotheses

In the motivation theory, both intrinsic and extrinsic motivations are posited to affect continuous intention. However, SNS as a new social platform, social influence should be considered as another external reinforcement for individuals to use SNS. Thus, social influence is integrated into the research model. In addition, we extend the model to explore continuous use and include satisfaction in the research model to explore both continuous intention and continuous use in order to see if continuous intention is till the primary predictor of IS use in the post adoption stage. According to the Expectation Confirmation Theory [14] [15], satisfaction is an important predictor of use continuous intention as well.

Recently hedonic IS usage has attracted the attention of researchers [16] [17]. Prior research has found that perceived enjoyment or perceived playfulness is an intrinsic motivation in predicting hedonic IS use, such as online gaming, online communities and SNS [18] - [20]. There is also an empirical validation of the importance of perceived enjoyment or playfulness in predicting satisfaction [21] [22]. Therefore, the following hypotheses are made:

H1: Perceived playfulness positively relates to satisfaction.

H2: Perceived playfulness positively relates to continuance intention.

Perceived usefulness has been assumed to be dominant in predicting continuous intention and use in spite

of the different research settings and technologies [23] [24]. Prior research has validated that perceived usefulness is an extrinsic motivation for individuals to use IS. In addition, perceived usefulness is also argued to be important in predicting user satisfaction in IS use. According to the Expectation-Confirmation IS continuance model [6], perceived usefulness is an important factor predicting both user satisfaction and continuous intention to use IS. Oliver [14] stated that user perception on the usefulness of IS is expected to have an impact on their satisfaction with IS from the expectancy-confirmation paradigm. Prior IS research empirically validated the positive relationship between perceived usefulness and satisfaction in different research contexts [25] - [28]. Thus, the following hypotheses are proposed:

H3: Perceived usefulness positively relates to user satisfaction.

H4: Perceived usefulness positively relates to continuous intention.

Social influence has been argued to be important in predicting IS use. According to Venkatesh et al. [23], social influence refers to the degree to which an individual perceives that important others believe he or she should use IS. In different IS adoption models, social influence are investigated with different constructs, such as subjective norms in Theory of Reasoned Action, Technology Acceptance Model 2, and Theory of Planned Behavior, and image in Innovation Diffusion Theory [23]. The effect of social influence on continuous intention to use IS has been shown to be significant in several previous IS continuance studies [29] [30]. SNS is regarded as a new way of social communication in the Internet environment. Therefore, social influence might affect individuals' continuous intention to use SNS, and the following hypothesis is proposed:

H5: Social influence positively relates to continuous intention.

In prior marketing research, satisfaction has been indicated to affect future intentions to repurchase positively, and prior IS studies have also found a causal link between satisfaction and continuous intention to use IS as well [6] [31] [32]. Satisfaction is viewed as a key factor in building and retaining a loyal base of long-term consumers. According to Expectation-Confirmation IS continuance model [6], users' IS continuance intention is determined primarily by user satisfaction. A large body of evidence in the IS domain has shown support for the association between user satisfaction and continuance intention in different contexts [6] [15] [31] [32]. In the IS success model, satisfaction was also argued to predict individuals' use of IS. Thus, satisfaction is expected to also affect continuous use of IS in the context of SNS use, and the following hypotheses are suggested:

H6: Satisfaction positively relates to continuous intention.

H7: Satisfaction positively relates to continuous use.

Continuous intention has been a dominant research topic in IS research because of its ability to predict future IS use behavior. Often, intention is viewed as a proxy of future behaviors. In IS research, individuals' IS use intention has been demonstrated to be a strong and immediate predictor of their IS use behavior with theoretical justification for this association from cognitive dissonance theory [33]. The strong association between intention and IS use has been empirically validated in prior IS research from different settings [6] [23] [29]. In this study we follow the prior tradition in IS research and propose that individuals' intention to continue using SNS affects their continuous use of SNS. Therefore, the following hypothesis is suggested:

H8: Continuous intention positively relates to continuous use.

Figure 1 presents the research model as well as research hypotheses.
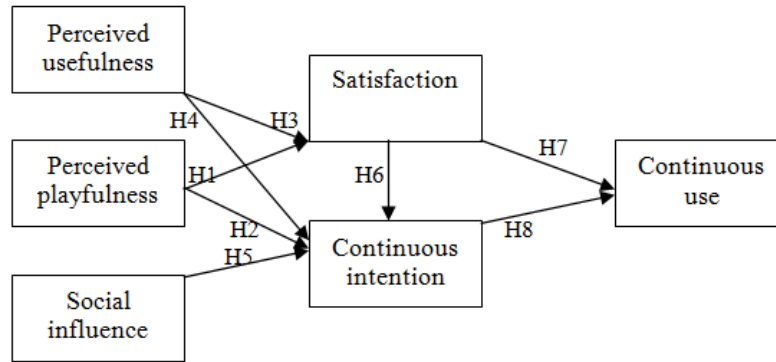
Figure 1 Research model

3. RESEARCH METHODS

3.1 Data collection

In order to validate the research model, a questionnaire survey was conducted to collect empirical data. In this research we choose Qzone as the subject for survey since Qzone is the most popular SNS in China with the biggest user population size. The questionnaire was initially developed in English and translated into Chinese by one of the manuscript's authors. Then another author conducted a back translation to ensure of the accuracy of the translation. In this research an online survey was conducted via online survey websites. A hyperlink to the survey was provided to the online survey web page as well as posted to different popular forums. The respondents are directed to the online version of the questionnaire by clicking on the hyperlink.

In this study, totally 228 responses were received. Among the 228 responses, 7 respondents were not included in the sample of this study because they indicated that they had no experience of SNS use. The remaining 221 responses were used as the basis of this study. The final samples consist of 99 males (44.8 %) and 122 females (55.2 %). Among the respondents, 194 (87.8%) of them have use computers for over 3 years, and 162 (73.3%) of them have used Qzone for over 3 years. Detailed information on the respondent profile is presented in Table 1.

3.2 Measurement

In this study, six constructs are included in the research models, including continuous use, continuance intention, satisfaction, perceived usefulness, perceived playfulness and social influence. The six constructs were measured using multiple observed items adapted from existing IS literature. In order to relate specifically to the research context of SNS, some modification and rewording have been conducted to the construct items in order to reflect the research context of SNS utility. A five-point Likert-scale ranging from strongly disagree (1) to strongly agree (5) was used to measure each item in the developed instrument.

Specifically, continuous use and continuance intention were measured using the items adapted from Bhattacherjee et al. [6] [25]. The four items of construct satisfaction were modified from the four items of Lee and Wu [34]. The measurements of construct perceived usefulness were taken from Liu and Lu [35] and Kwon and Wen [36] Perceived playfulness was measured taking the items from Liu and Li [16] and social influence was measuring using the items adapted from Venkatesh et al. [23].

Table 1. Respondent profile

Demographic profile	Category	Frequency	Percentage (%)
Gender	Male	99	44.8
	Female	122	55.2
Age	underUnder 20	50	22.5
	20-25	125	56.5
	26-30	29	13.1
	30-35	12	5.4
	More than 35	5	2.3
Education	Junior or senior high school student	9	4.1
	Undergraduate	139	62.9
	Postgraduate	54	24.4
	Doctor	18	8.1
	Others	1	0.5
Computer use experience	Less than half a year	0	0
	Half to 1 year	9	4.1
	1 to 2 years	10	4.5
	2 to 3 years	8	3.6
	More than 3 years	194	87.8
SNS use experience	Less than half a year	5	2.3
	Half to 1 year	10	4.5
	1 to 2 years	25	11.3
	2 to 3 years	19	18.6
	More than 3 years	162	73.3

3.3 Data analysis

Partial Least Squares (PLS) path modeling was utilized to evaluate the research model. PLS was used to make a simultaneous analysis of both measurement model and structural parameters in the proposed research model. In this study the measurement model was test with an algorithm procedure in PLS and the significance of all proposed path in the research model was test with the bootstrap procedure in PLS. Smart PLS version 2.0 was used in the current study.

3.4 Validity and reliability

Convergent validity indicates the degrees to which the items of a scale that are assumed to be theoretically associated are also related in reality. Convergent validity indicates the degrees to which the items of a scale that are assumed to be theoretically associated are also related in reality. Convergent validity can be evaluated by the following three criteria: i) the estimates of the factor loadings of the measurements on the respective constructs should be significant and exceed 0.7; ii) the composite reliability (CR) of all the constructs should over 0.8; and iii) the average variance extracted (AVE) by each construct should meet the cut-off value of 0.5 [37] - [39].

As shown in Table 2, all the factor loadings of the measures included in the research model are satisfactory with the cut-off value above 0.7. The values of CR and AVE of all constructs satisfy the recommended threshold values of 0.8 for CR and 0.5 for AVE. The Cronbach's alpha values all satisfy the threshold value of 0.7. The test results reveal a good internal consistency and reliability of the research instrument, supporting the convergent validity of the research data.

Table 2. The Measurement Model

Construct	Items	CR	AVE	α	Factor Loading	t-value
Perceived Usefulness	PU1	0.93	0.83	0.90	0.88	57.58
	PU2				0.94	144.13
	PU3				0.91	83.35
Perceived playfulness	PP1	0.95	0.84	0.94	0.92	96.86
	PP2				0.91	82.65
	PP3				0.95	177.92
	PP4				0.88	74.20
Social influence	SI1	0.91	0.78	0.86	0.77	29.11
	SI2				0.93	87.83
	SI3				0.93	129.39
Satisfaction	SAT1	0.96	0.86	0.95	0.92	111.43
	SAT2				0.93	123.21
	SAT3				0.91	94.20
	SAT4				0.94	124.88
Continuous intention	CI1	0.98	0.94	0.97	0.96	125.99
	CI2				0.98	285.80
	CI3				0.97	186.85
Continuous use	CU1	0.96	0.90	0.94	0.94	126.28
	CU2				0.97	243.50
	CU3				0.94	137.13

Discriminant validity refers to whether the items of a scale reflect the construct in question or reflect another related construct. It can be verified with the square root of the average variance extracted for each construct. If the variances of the square root of the average variance extracted for each construct are higher than any correlation between this construct and any other construct, the discriminant validity is supported [40]. As shown in Table 3, each construct in the proposed research model shares a greater variance with its own reflective construct than with any other construct in the research model. Thus, the discriminant validity in this study was supported.

**Table 3. Correlation Matrix and Discriminant Assessment**

	PU	PP	SI	SAT	CI	CU
PU	**0.91**					
PP	0.70	**0.92**				
SI	0.55	0.51	**0.88**			
SAT	0.72	0.74	0.57	**0.93**		
CI	0.64	0.66	0.61	0.66	0.97	
CU	0.60	0.64	0.57	0.63	0.71	**0.95**

Note: The bold diagonal are the square roots of the AVEs of the individual constructs; off diagonal values are the correlations between constructs.

4. RESEARCH RESULT

Figure 2 presents a graphical description of the results of model validation in the current study, including

path coefficient, variances explained and associated t-value of paths. All the proposed hypotheses in the research model are supported.
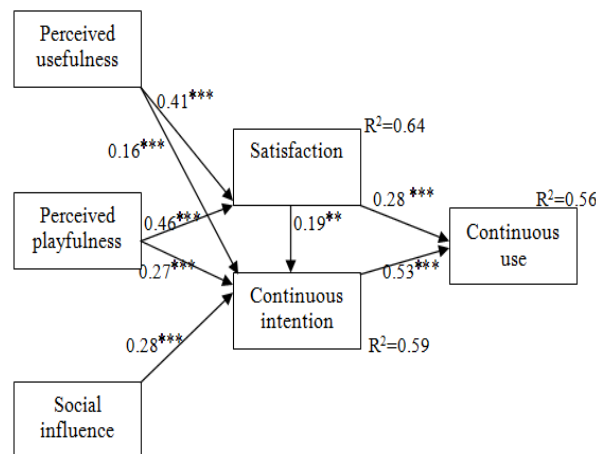
Figure 2. Results (**: $p<0.01$; ***: $p<0.001$**)**

Perceived usefulness ($\beta=0.41$, $p<0.001$) and perceived playfulness ($\beta=0.46$, $p<0.001$) are found to affect satisfaction. Perceived usefulness ($\beta=0.16$, $p<0.001$), perceived playfulness ($\beta=0.27$, $p<0.001$), social influence ($\beta=0.28$, $p<0.001$) and satisfaction ($\beta=0.19$, $p<0.01$) are found to affect continuous intention. Both satisfaction ($\beta=0.28$, $p<0.001$) and continuous intention ($\beta=0.53$, $p<0.001$) are significant predictors of continuous use. The proposed research model accounts for 64 per cent of the variance of satisfaction, 59 per cent of the variance of continuous intention, and 56 per cent of the variance of continuous use.

5.   DISCUSSION AND CONCLUSIONS
5.1 Theoretical implications

The current study investigated the factors associated with SNS users' continuous intention and continuous use of SNS in the Chinese context through the use of the motivation theory.

Consistent with prior research findings, both extrinsic (perceived usefulness) and intrinsic (perceived playfulness) are found to be significant predictors of user satisfaction and continuous intention to use SNS. In addition, social influence and satisfaction are also found to affect continuous intention, and social influence exerts the strongest influence on continuous intention. This may suggest that the most important people around individuals have a strong and important influence on individuals' continuous intention to use SNS, and the intrinsic motivation (perceived playfulness) has a strong effect in predicting continuous intention than that of extrinsic motivation (perceived usefulness) though extrinsic motivation also influences their continuous intention together with perceived service satisfaction.

Also in this research, satisfaction and continuous intention are found to affect continuous use of SNS significantly. Continuous intention still is a stronger predictor of continuous use than satisfaction. This finding is consistent with the prior IS research findings that continuous intention is the primary factor determining continuous use. Though satisfaction affects continuous use, its influence is still not as strong as that of continuous intention on continuous use.

The study partly addressed the call for investigating different factors predicting IS continuous use. This study investigated the different roles of satisfaction and continuous intention in predicting continuous use behavior, which offers some fresh insight to understand IS continuance behavior study.

5.2 Managerial implications

The results contribute to a number of new insights for practitioners. First, SNS operators should pay more attentions to their SNS design and improve individuals' perceptions on the enjoyment or playfulness in using SNS since perceived playfulness is a strong predictor of continuous intention to use SNS. In addition, the significant association between social influence and continuous intention suggests that it is important for SNS to take strategies to advocate SNS via individuals with strong personal influence to affect other individuals' use of SNS. Moreover, SNS should consider the function of SNS as well as user experience in order to improve user satisfaction and continuous intention aiming at retaining SNS users.

6.　LIMITATIONS AND FUTURE RESEARCH

Despite its findings and implications, this study involves some limitations that need to be acknowledged. First, the findings and implications are derived from the study conducted in China. Therefore, researchers should take cautions when generalizing the research findings to other SNS usage contexts. This gives a possible avenue for future studies to research on cross-cultural and cross-market contexts to investigate and compare the difference in factors predicting both continuous intention and continuous use. Second, other factors related to social aspect should be considered in predicting SNS. In the current study, only social influence has been investigated, which gives places for future research, such as critical mass, telepresence and so on.

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