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UNDERSDANDING USERS' CONTINUANCE USAGE FOR SOCIAL NETWORK SERVICES: A THEORITICAL MODEL AND EMPIRICAL ASSESSMENT[1]

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Abstract

As a newly emerged e-business model, Social Network Services (SNS) has encouraged new ways of communication and relationship building, also viewed as "the next big thing after Google". This study draws attention to the substantive differences between adoption and continuance behaviors in the context of SNS, develops the usage continuance model of SNS to investigate continued usage behavior and underlying factors through literature review and theoretical analysis, verified by an empirical test that involved structural equation modeling. This study will advance the theory of IS continuance, provide a comprehensive research model to investigate the post-adoptive behaviors of SNS and help SNS-empowered businesses and organizations to identify critical factors fundamental to long-term viability and the eventual success of their businesses.

Keywords: Social Network Services; Continuous Usage; Behavior Model; Perceived Enjoyment; Structural Embeddness

1. Introduction

Entering the new century, the tremendous progress of information and communication technologies has accelerated the transform of the Internet from information dissemination channels and business trading platforms into social interaction space, featured by the rapid spread of the personalized, interactive participation, virtual Web2. 0 and social network services in China and around the world. Social Network Services (SNS), also known as " the next big thing after Google "[1], aiming to promote the communication and interaction between people and establish extensive social networks, integrates the application of blog, communities, online games, photos, music, video sharing and other Web2.0 applications. Social Network Services is showing a huge growth potential which is supported by two important conditions: the scale of registered users as the prerequisite and necessary condition and active users as the necessary and sufficient condition to ensure its ultimate success. Without sustained and effective usage, only initial user registration is difficult to bring SNS websites the expected value [2].

From the theoretical perspective, the above statement can be described as: For value-added activities of SNS to be fully realized, however, long-term viability and the eventual success of the services depend on continuous usage rather than the initial acceptance. However, the present IT adoption studies are mostly based on cross-sectional theoretical models, which makes it difficult to explain the user discontinuance of IS after its initial adoption [3]. Therefore, furthering our understanding of the initial

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acceptance and subsequent discontinuance anomaly is of value to researchers and practitioners alike [3] [7] [9]. But, there are still large gaps in the theoretical and empirical research of continuous IS usage which has become the frontier of IS research [3] [4] [5].

Realizing a lack of knowledge in this area, we will study the motivating antecedents and behavior pattern of SNS users after initial adoption in more detail. The usage continuance model of Social Network Services is developed based on expectation confirmation theory and other theoretical perspective, and is empirically tested through survey method. The results will extend and enrich the theoretical studies of continuous IS usage, deepen the understanding of behavioral pattern of SNS users' continuous usage and be helpful to the development of SNS in China. The rest of the paper is organized as follows: Part two describes the features of SNS; Part three is the literature review on IS continuance; Part four is about the theoretical foundation and research model building; Part five is about the research design, including data sampling, measurement and statistic method; Part six is the data analysis and result discussions; Finally, main conclusions and future research implications are presented.

2. Overview of Social Network Services

In the new century, the development of Internet applications have broke the limitations of organization and workplace situations, which promotes the research of IT / IS usage onto a new stage [5] [16]. Social network services being an emerging e-business model with important features as personalized, interacting, virtual and social is different from the utilitarian systems that exist in organizational and workplace situations, and also different from traditional e-business such as B2C, B2B, making the usage behavior hard to explain solely by using existing theoretical model in the context of traditional information systems or e-business.

SNS has new technical infrastructure, new ideas and business models with a great potential to become a basic online service [11]. A preliminary comparison between SNS as a hedonic system and utilitarian system are shown in Table 1:

Table1 Comparison between SNS and Utilitarian System

	Utilitarian System	SNS Service
Usage Context	organization and workplace situations;	Off the Job Hours; Leisure Time;
Pattern of Usage	Emphasize on the interaction between system and the users;	Emphasize on the interaction among users;
Value Reflection	Working performance Improvement;	Playful Experience; Self-fulfilling;
System Aim	Alignment with working activities;	Degree of "Fun"; Immersion;
Institutional Environment	Rigid required by organization;	Voluntary usage;

From the above comparison we can see that SNS is different from utilitarian systems in many ways. Thus, a unique contextual extension study is needed as to help us better understand SNS. Besides, studies of usage behavior under particular IS context (SNS) will shorten the distance between the theoretical model and application.

3. Literature Review on IS Continuance

In the past decades, most research in the area of information systems (IS) usage has focused on the early phases in the usage life cycle, that is, on adoption. Primarily based on theories adapted from social psychology (theory of reasoned action, TRA; theory of planned behavior, TPB; and so forth), some theoretical model, such as the technology acceptance model (TAM) and unified theory of acceptance and use of technology (UTAUT), have been developed to explore the variables that motivate individuals to initially accept (or not) a particular IS [5] [6]. However, IS adoption is just the first step towards overall IS success, continuous IS usage is a key driving force for the eventual success of IS implementation [8] [9]. Therefore, in recent years, some scholars have gradually begun to study the nature of IS continuance and to compare it with adoption. IS continuance, IS continuance behavior, or continuous IS usage refers to user's beliefs and behavior patterns reflecting the continued use of a particular IS after initial adoption [9].

Continuance is not entirely an alien concept in IS research, it has been examined variously as

post-implementation, routinization, post-adoptive behavior in the IS literature [3] [7] [8]. Based on the literature review, the research on IS continuance evolved in two paths: one is to extend the current the theories of IT adoption through longitudinal studies based on the existing antecedents to better explain continuous usage behavior after initial adoption. The other is to introduce new theoretical perspectives and a different set of antecedents (including satisfaction, habit, and emotion-related concepts) to construct the model of IS continuance [9] [10]. In general, IS continuance is still a new research field compared to research of adoption.

3.1 Revising Adoption Theory Through Longitudinal Studies

Taylor & Todd (1995) when extending the TPB model to the "Decomposed Theory of Planned Behavior (DTPB), found that the typical beliefs and attitudes employed to explain the usage intention of adopters explains considerably less variance in usage intention of more experienced users [12]. Later, Karahanna et al. (1999) empirically confirmed these results by comparing inexperienced users (adopters) with experienced ones. To understand the consistency in usage behavior across time, Venkatesh et al. (2002) reported that when they included short-term usage (prior usage experience) as an additional antecedent into TAM model, the relationship between all other determinants (including behavioral intention, perceived usefulness, and perceived ease of use, etc.) and continued use became insignificant[13]. Gradually, IS scholars found more evidence to suggest that the determinants of initial user acceptance are different from the determinants of continued usage [13] [14]. So, the new theoretical perspective should be introduced to focus on how and why IS user behaviors change over time.

3.2 New Theoretical Perspective on Continuous IS Usage

Prior literatures confirm that IS continuance is not simply an extension of adoption behavior. Drawn expectation confirmation theory (ECT) from marketing and consumer behavior literature,

Bhattacherjee's (2001) work published in *MIS Quarterly* builds on entirely different theoretical foundations. This paper is one of the earliest to conceptualize and test a theoretical model of IS continuance that takes into account the distinctions between acceptance and continuance behaviors.

ECT is widely used in consumer behavior literature to study consumer satisfaction, post-purchase behavior (e.g., repurchase, complaining), services quality [15]. ECT posits that satisfaction is a function of prior expectations and (dis)confirmation, and satisfaction is a key determinant of repurchase intentions [15]. Expectation is defined as a set of pre-exposure beliefs about the product. Consumers assess the product's perceived performance vis-à-vis their original expectation and determine the extent to which their expectation is confirmed (confirmation[1]).The casual logic of ECT is as follows [9][36]: (1) consumers first develop expectations about the product's performance characteristics before purchase; 2) a cognitive comparison between expectations and actual experiences leads to a subjective calculation of confirmation; and 3) expectations and confirmation additively determines the consumer's level of satisfaction with the product, in turn, influences repurchase intentions.

Based on ECT, Bhattacherjee proposed Expectation-Confirmation Model of IS Continuance (ECM-ISC) and identified the motivations underlying continuance intention (i.e., intentions to continue to use a IS), as shown in figure 1. The introduction of ECT in IS usage research was a key step in furthering our understanding of continued IS use. ECM-ISC has made contributions to the IS continuance literature: First of all, ECM-ISC focuses on post-adoptive phase, and posits that a user's expectation towards using an IT after gaining experiences from using it should be different from those expectations before using it. Second, the new variables derived from ECT, such as confirmation and satisfaction, are introduced as the key

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[1]This construct is also labeled disconfirmation in the marketing literature, and ECT is also called expectation disconfirmation theory.

antecedents of IS continuance intention. Satisfaction, this object-based affect has received more attention, may be the key to explaining the IS adoption discontinuance anomaly (user discontinuance of IS after its initial adoption) [16] [17]. In Bhattacherjee's empirical study, satisfaction was the stronger predictor of continuance intention (explaining 32% of intention variance) relative to perceived usefulness (the direct and indirect effects of perceived usefulness jointly explained 10% of the intention variance). Thirdly, ECM-ISC uses perceived usefulness after initially using an IS as the measure of expectation, and demonstrates that the effect of perceived usefulness on users' intention in both adoption and continuance contexts is consistent and salient across temporal stages of IS usage.
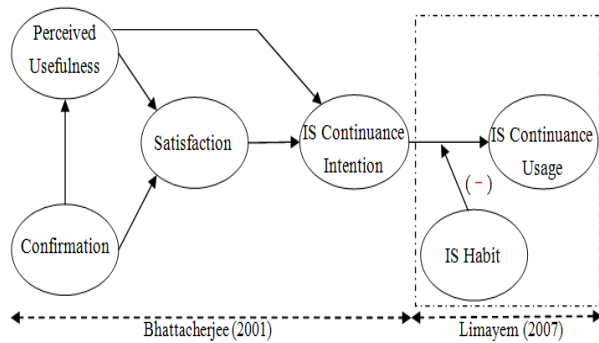

Figure1 ECM-ISC Model

Like most other studies in this area, empirical data for this study was collected via a cross-sectional field survey, and the model relies on intention as the primary predictor of IS continuance behavior [14]. Such limited view on user's intention has been contended by IS scholars [11] [19] who posit that user's initial continued use is under the influence of intention, but his/her repetitive use of the IS would gradually become habitual when routinization is high. Limayem (2007) investigated the link between intentions and IS continuance usage through longitudinal study, and also modeled IS habit as a moderator [11]. Once a habit[1] is established, the predictive power of intention is weakened.

4. Theoretical Foundation and Research

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[1] Limayem (2007) defined habit as the extent to which people tend to perform behaviors (use IS) automatically because of learning.

Model

Not until late 2006, did IS scholars begin the studies on the acceptance and usage of social network services, and especially focused on continued usage behaviors [20]. So, IS researchers have recognized that the unique characteristics of SNS warrant SNS a distinct research domain, and most of the literatures on the behavior of SNS are published in ICIS, AMCIS and other important IS academic conferences in the last three years. However, until now no empirical study on user behavior of SNS modeling by domestic researchers has been seen by the author. The extended studies of IS continuance based on ECM-ISC model has been widely published in *MIS Quarterly*, *Information Systems Research*, *Decision Support Systems*, *Information & Management* and other top academic journals, which confirms the fact that ECM-ISC is recognized as the strong theoretical underpinning in the research of post-adoptive behaviors [11] [24] [25]. This research is premised upon the Expectation-Confirmation Model of IS continuance, and proposes a comprehensive usage continuance Model of SNS through incorporating other new theoretical insights and constructs in Figure2.
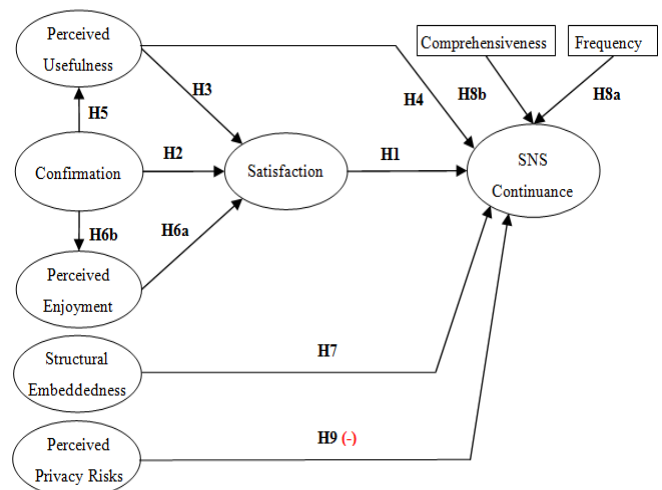

Figure 2 the Model of SNS Continual Usage

4.1 Expectation Confirmation Theory

There are five main hypotheses in the ECM-ISC. First, studies in marketing have discovered that satisfaction is viewed as the key to building and retaining a loyal base of long-term consumers [17]. Owing to the similarity between re-purchasing products/services in a consumer context and the continuous IS usage, the ECM posits that users' satisfaction with IS has a positive effect on their continued usage intention. Next, satisfaction is determined by the users' post-adoption expectation (represented by ex post perceived usefulness) and their confirmation of expectations and their perceived usefulness [9] [11]. Further, IT adoption literatures have demonstrated perceived usefulness as the most important factor in determining users' adoption intentions [10] [14]. Therefore, ECM-ISC hypothesizes a direct positive link from perceived usefulness to a IS user's continuous usage intention. Finally, perceived usefulness of IS could be adjusted by the level of confirmation resulting from the usage experiences. Hence, the following hypotheses are derived from the ECM-ISC：

Hypothesis 1 (H1): Users' satisfaction with SNS is positively related to their continuous usage intention of SNS.

Hypothesis 2 (H2): Users' extent of confirmation of expectations with SNS is positively related to their satisfaction with SNS.

Hypothesis 3 (H3): Users' perceived usefulness of SNS is positively related to their satisfaction with SNS.

Hypothesis 4 (H4): Users' perceived usefulness of SNS is positively related to their continuous usage intention of SNS.

Hypothesis 5 (H5): Users' extent of confirmation of expectations with SNS is positively related to their perceived usefulness of SNS.

What needs special attention is that: Being a typical hedonic system, SNS is not used under organizational or working environment whose value shouldn't be reflected on the improvement of efficiency or performance but on the "sociality"

angel. According to the social networking perspective, the application of SNS forms a network of people (community) through electronic mediation whose value is shown in the ties between people and the value of shared information[2][23] . Therefore, in the research of continual usage of SNS, the author will define the perceived usefulness mainly in the following angles: scale of connections, newly established connections and the value of information.

4.2 Perceived Enjoyment as an Intrinsic Motive

The usage of SNS is mostly out of personal reasons—interpersonal relationships, relaxation, emotional expression, not performance improvement in the context of organization or workplace. Thus, the constructs, such as perceived usefulness and performance expectation, brought forward by IT adoption studies is not totally applicable to hedonic information systems like SNS [28]. Beyond utilitarian determinants, social information systems could be used for hedonic purposes [28].The role of hedonic outcomes has received some attention in the IS usage literature via constructs such as enjoyment or playfulness, they are validated as significant intrinsic motivator of voluntary IS usage activities [24] [32]. Rosen (2006) replaced the perceived usefulness in TAM by perceived enjoyment in the research of the acceptance of SNS and also discussed the antecedents influencing perceived enjoyment [20]. Rosen (2008), Sledgianowski (2008) also think it's necessary to add intrinsic motivations such as pleasure or enjoyment to better explain the usage of SNS [21].

User's intentions or behaviors are both extrinsically and intrinsically motivated. Perceived usefulness is extrinsic motive, whereas perceived enjoyment or playfulness is intrinsic [24] [32]. When people get involved in an activity for pleasure or enjoyment, this is their intrinsic motive and it should increase the likelihood that they would revisit the SNS websites in the future. Therefore, one basic assumption was that perceived enjoyment impacted users' satisfaction in using the SNS and thus their intention to reuse it. This leads to the following hypotheses:

Hypothesis 6a (H6a): Users' perceived enjoyment is positively related to their satisfaction with SNS.

Since ECM-ISC is used as a baseline model, and posit that perceived usefulness is influenced by confirmation. Similar to perceived usefulness, it is reasonable to believe that confirmation would impact on perceived enjoyment. This leads to the following hypothesis:

Hypothesis 6b (H6b): Users' extent of confirmation is positively related to their perceived enjoyment of SNS.

4.3 Structural Embeddedness

Besides the individual motivations, we also consider structural properties from social networking perspective. The social networking perspective draws on the patterns of interactions and exchanges within social units in which an actor is embedded to explain outcomes experienced by the actor. In fact, in line with the view that highly structurally embedded individuals are likely to cooperate and comply with groups norms and expectations, prior research has found a positive effect of individuals' structural embeddedness on their knowledge contribution in online professional community of practice [37].

Structural embeddedness – which refers to the number of ties an actor has to other actors – is a key construct in this regard [26]. Hence, if the SNS users objectively perceive that a large portion of people in their social relations (including classmates, friends and colleagues) are using SNS websites to communicate and maintain relationship, the intention of continued usage will be stronger. This leads to the following hypothesis:

Hypothesis 7(H7): Users' degree of structural embeddedness is positively related to their continuous usage intention of SNS.

4.4 Frequency and Comprehensiveness of Prior Usage

The premise of IS continuance is that the beliefs and intentions toward IS use change over time as users gain experience with the target system [3] [8] [10]. Few IS scholars tried to establishing an empirical link between prior and future behavior.

Limayem (2007) posits that use history in terms of frequency and comprehensiveness of prior usage plays a moderating role between the antecedents of usage continuance and continuance behavior [11]; Kim (2005) built a two-phase dynamic model based on TAM, adding feedback mechanism [4].

Therefore, the influence that prior usage on the long-term usage is included in the model. According to existing literature, the prior usage can be measured by the two dimensions: frequent repetition of the behavior and comprehensiveness of usage [11] [18]. The comprehensiveness of usage, which refers to the extent to which an individual makes use of the various functions offered under the umbrella of a single IS system. When individuals make more frequent and comprehensive SNS use, their usage behavior is continued and extended. This leads to the following hypothesis:

Hypothesis 8 (H8a): Users' prior usage of SNS, measured by frequency, is positively related to their continuous usage intention of SNS.

Hypothesis 8 (H8b): Users' prior usage of SNS, measured by comprehensiveness, is positively related to their continuous usage intention of SNS.

4.5 Perceived Privacy Risk

Due to the high degree of uncertainty and risks, various studies show that as people get more involved with online services, they become more concerned with information privacy [22]. In the context of Internet and social networking, privacy issues are about how personal information is disclosed, collected, distributed, and used either with or without the individual's knowledge and permission. Here, we adopt the definition: privacy risk as "potential loss of control over personal information, such as when information about you is used without your knowledge or permission [29].

Empirical findings of IS research suggest a negative relationship between individuals' privacy risk perceptions and their intention to use and continue online services [22]. In SNS virtualities, the gain of

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enjoyment experience and the maintenance and improvement of interpersonal relationship imply giving away more personal data, creating more informational risks. To social network services that need true identity and other personal data, the perceived privacy risks should be emphasized, especially in mainland China where the related law and market environment is not perfect. This leads to the following hypothesis:

Hypothesis 9(H9): Users' perceived privacy risks are negatively related to their continuous usage intention of SNS.

5. Research Design

5.1 Sampling

In this paper, the website RenRen(人人网) which is the most famous social network services for colleague students in China is chosen as the research site. We have the following reasons:

(1) This study on continuous usage of SNS requires the individual to have prior SNS usage experience. Colleague students are the pioneers in the use of SNS. The rapid growth of leading websites such as Facebook, RenRen(人人网) relies largely on the participation of colleague students.

(2) The questionnaires can be released during classes or societies which are easy to collect and also have a certain level of randomness, so we get a convenient sample.

(3) Different user groups differ in occupation, age, education level and income, etc. These control variables may influence the behaviors of SNS user. Colleague students are similar in the above aspects and can be regarded as a same user group which weakens the interference of the control variables, making it better to study the influences that key antecedents such as beliefs, attitudes and perceptions exert.

In the survey, 240 questionnaires were released, 140 returned (58%). Of the 140 returned, 5 samples that have never used SNS were eliminated. The number of valid questionnaires was 135 with sample distribution as follows: male, female ratio was 44%,

56%; undergraduate, graduate and doctor ratio of 45%, 47% and 8%; the distribution of experience of Internet usage, 1-5 years, 48%, 6 - 10 years, 34%, while more than 10 years 18%.

5.2 Measurement

To ensure the reliability and validity of the measurement, the scale items in this study were developed based on existing literature and adjusted according to SNS context. The questionnaire items are presented in Table 2. All items used a seven-point scale, anchored at the ends by either "strongly agree" and "strongly disagree" or "very large extent" and "not at all", following the original instrumentation. The questionnaire also collected data on the characteristics of the respondent. The correlation matrix between the researches concepts are shown in Table 2.

Table2 Measurement for the Constructs

Construct	Reliability	Factor Loading
Perceived Usefulness (PU)[23]	0.80	0.85
		0.81
		0.89
Expected Confirmation (ECT) [9]	0.89	0.90
		0.93
		0.89
Perceived Privacy Risks(PCR)[31]	0.83	0.85
		N/A
		0.89
		0.62
		0.65
User Satisfaction (SAT)[9]	0.86	0.85
		0.87
		0.91
		0.73
Intention of Continual Usage(SCI) [9]	0.83	0.91
		0.90
		0.78
Perceived Embeddedness(PSE)[27]	0.76	0.74
		0.89
		0.68
		0.73
Perceived Enjoyment(PEN)[32]	0.87	0.88
		0.72
		0.89
		0.90
Prior Behavior/Continued Usage[11]		

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5.3 Method of Data Analysis

Partial least squares (PLS), a component based approach that is suitable for smaller datasets [33], will be used. We will conduct the data analysis in two stages: First, we assess the measurement model to ensure that the constructs had sufficient psychometric reliability and validity, and then analyze the proposed structural model to verify the research hypothesizes. The statistic software, such as SPSS 13.0 and PLS-Graph 3.0, was used to perform the analysis.

6. Analysis Results and Discussions

6.1 Reliability Test

The reliability test is used for exhibit the inter-item consistency of first order latent construct. In social scientific research, if Cronbach α is greater than 0.7, the construct display adequate reliability. According to Table 2, the reliabilities for the constructs are all above the suggested value of 0.7. So, all first-order constructs display higher internal consistency.

6.2 Validity Test

The two elements, convergent validity and discriminant validity, are components of a larger scientific measurement concept known as construct validity [34]. These two validities capture some of the aspects of the goodness of fit of the measurement model, i.e., how well the measurement items relate to the constructs [34].

We use PLS performs a confirmatory factor analysis (CFA) for convergent validity test, the results (in Table 3) shows that all the item loads in its latent construct are above 0.6. It shows that most of the variance is captured by the latent constructs, and each measurement item correlates strongly with its assumed theoretical construct.

Establishing discriminant validity in PLS also requires an appropriate AVE (Average Variance Extracted) analysis. Table 3 presents the inter-correlations among constructs, as well as the square roots of AVE values (on the diagonal). As a

rule of thumb, the square root of the AVE of each construct should be much larger than the correlation of the specific construct with any of the other constructs in the model and should be at least 0.7 [34]. The table provides evidence to support the discriminant validity of the constructs.

Table 3 the Correlation Coefficient Matrix and AVE

	PU	ECT	PCM	PCR	PEN	SAT	SCI	Comh	Frequ
PU	0.85								
ECT	0.46	0.90							
PNS	0.66	0.47	0.76						
PCR	0.01	-0.16	0.01	0.76					
PEN	0.58	0.69	0.62	-0.31	0.85				
SAT	0.23	0.63	0.23	-0.38	0.57	0.84			
SCI	0.52	0.67	0.50	-0.21	0.58	0.53	0.86		
Comh	0.25	0.36	0.28	0.00	0.35	0.26	0.40	1.00	
Frequ	0.14	0.15	0.13	-0.17	0.25	0.34	0.21	0.29	1.00
Diagonal elements are the square roots of AVE									

Besides, discriminate validity can also be tested through the cross-loaded matrix between first-order latent variables and measurable indictors which is omitted due to the limited page.

6.3 Hypotheses Testing

The nine hypotheses were tested collectively using structural equation modeling (SEM) as performed in PLS Graph. This approach is particularly appropriate for testing theoretically justified models. Each indicator was modeled in a reflective manner (as in CFA), the constructs were linked as hypothesized (see Fig. 2), and model estimation was done using the partial least squares. Then, the path significance of each hypothesized association in the research model and the variance explained (R^2 Value) were examined. Figure 3 shows the standardized path coefficient and path significance, as reported by PLS Graph.
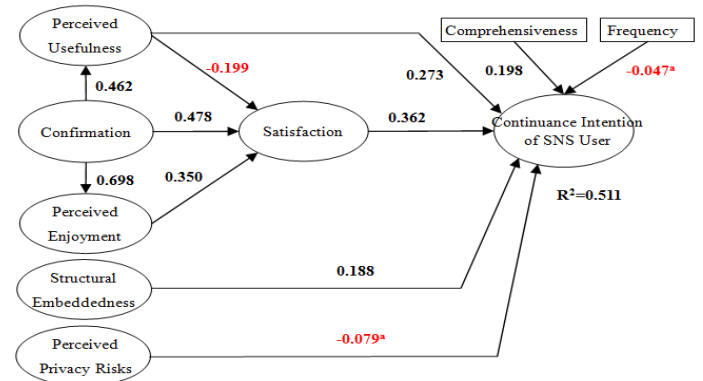

Figure 3 the analysis result of structural model

(a. insignificant at the 0.05 level; the significant of the other path coefficient at the 0.05 level)

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(1) The R^2 of the research model reaches 0.51; meaning that the model could explain over 50% of the variance in SNS users' intention to continuous usage. The results show an acceptable goodness-of-fit between the hypothesized model and the observed data.

(2) Result shows that the research hypotheses H1 H2 H4, H5-H7 and H8b are well supported by the statistical data, all the significance level are less than 0.05. The path coefficient between user satisfaction and continual usage of SNS is the highest (0.362), the second is the perceived usefulness (0.273). The path coefficients between structural embeddness, comprehensiveness of prior usage and the continuance intention of SNS user are relatively low (respectively 0.188, 0.198). Hypotheses H3, H8a and H9 are not well supported, since the perceived privacy risks (H9), the previous use frequency (H8a) were not found to have a significant impact on the continuance intention of SNS user.

(3) While confirmation has the primary effect on satisfaction (0.478), the post-adoption beliefs still do contribute substantially in determining satisfaction. Entering all variables in a single block, it was found that the proposed model explained a significant percentage of the variance in satisfaction ($R^2 = 45\%$). At the 0.01 significance level, perceived enjoyment and confirmation influence users' satisfaction toward continued use of SNS. But, an interesting phenomenon is that the path coefficient between the perceived usefulness and user satisfaction is negative at a significant level, and the perceived usefulness is associated with the continuance intention of SNS user directly. The result can be explained in two ways: the existing literature shows that in the context of the Internet and mobile services, perceived usefulness and user satisfaction often do not have a significant correlation or a slightly negative correlation[24] [25]. Hence, the influencing mechanism of perceived

usefulness in the context of hedonic system (such as SNS) is worth discussion; the other way is that, due to the high level of users' post-adoption expectation, it's not easy for the SNS website to provide more satisfying services.

(4) The comprehensiveness of prior usage has a significant influence on the continuance intention of SNS user (0.198), while the frequency has not been related to the continuance intention at a significant level. Because SNS offers a broad array of functionality and integrates ever more applications into a single platform, the idea of usage comprehensiveness has considerable merit for both research and practice

(5) The perceived privacy risks have shown no negative influence on the continuance intention in the empirical test. This may be caused by the fact that most of the samples are colleague students, further studies should be extended to other user groups.

7. Conclusions and Future Studies

Social Network Service, a newly emerged e-business model, is set as the specific situation in the paper. Based on the comprehensive literature review of IS continuance, the ECM-ISC model was extended and adjusted in the context of SNS, a comprehensive usage continuance Model of SNS through incorporating other new theoretical insights and constructs was proposed. The research model was empirically verified by survey method and statistic analysis. The conclusions mainly consist of the following:

(1) The expectation confirmation theory of IS continuance is a theoretically rich model by virtue of its inclusion of post-adoptive behavior. The refinement of ECM-ISC for the SNS context is critical with confirmation; satisfaction introduced as key antecedents of SNS users' continues usage.

(2) Although ECT has been fairly useful in studying IS continuance, perceived enjoyment could be a

critical variable for investigating the SNS user's continuous usage due to the hedonic features of social network services.

(3) Although perceived usefulness was not found to be significantly associated with satisfaction, its significant association with continuance usage remained unchanged, regardless of the extra variable (perceived enjoyment, structural embeddness). This finding corresponded to previous research. Obviously, the usefulness of a SNS website cannot be ignored.

(4) Non-perceptional constructs, such as structural embeddness, prior usage should be assessed in the research of SNS users' continues usage.

(5) As SNS users' continuous usage is across temporal stages, the influence of prior usage is necessarily considered. To our knowledge, the concept of comprehensiveness of usage (or similar) has not received any attention.

Further research could be done in two ways: first, longitudinal study could be carried out on the usage of the samples to investigate the change of intentions and behaviors across temporal stages of SNS usage; second, the research samples could be extended to other representative user groups: user groups of different occupations, ages and incomes to throw light on the development of different types of SNS websites.

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