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AN EMPIRICAL STUDY OF FLOW EXPERIENCES IN SOCIAL NETWORK SITES.

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Abstract

Social network sites (SNS) have simplified and amplified social interaction between online users. The unique hedonic-oriented features provide experiential motives for SNS users. Although SNS is growing popularity, a number of questions remain to be addressed concerning the usage of SNS: What are experiential motives for SNS users? What is the relationship between flow experiences and behavioral intentions winthin the SNS context? Given the novelty of SNS phenomenon and its unexplored potential in many fields, this study develops a conceptual model derived from reference studies on online services and social psychology. The present study proposes four flow experiences of SNS users such as perceived enjoyment, concentration, escape and social ineteraction to represent the multi-dimensional aspect of flow instead of a single dimension. To investigate the research model, this study apply structural equation mode(SEM) anlysisl with 342 valid replies. As a result, this empirical study indicated that perceived enjoyment was the most important flow experience with SNS, followed by escape and social interaction. Concentration was not a significant predictor of behavioral intentions toward SNS.

Keywords: Social network sites, Flow theory, Behavioral intentions

1   INTRODUCTION

The proliferation of the Internet has led to the emergence of user-oriented websites such as social network sites (SNS). Users of SNS have recently exploded at an exponential rate. The rapid growth of SNS is indicative of its entry into mainstream culture and its integration into the daily lives of many people all over the world. The objective of SNS is to encourage users to establish or maintain relationships with other users in the cyberspace as in the offline world.

According to boyd and Ellison (2007, p. 211), SNS "allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system". Drawn on some research findings (boyd & Ellison 2007; Rau et al. 2008; Steinfield et al. 2008) indicate that most of participants use SNS for social purposes. That is, reading and posting comments would be more popular than surfing the web or downloading music. Created in 2004, Facebook is the world's largest SNS with 610 million unique global visitors as of Feb. 2011 (checkFacebook, 2011). Basic features of SNS include social networking with others and posting on a "wall" or "commenting".

These distinctive features provide various experiential motives for SNS users. Practitioners who offer SNS would naturally prefer to attract as many visitors as possible to their websites, engage potential users in "sticking" for a time, and even provide enjoyable activities encouraging users to their sites. To date, less is known about the factors that result in SNS usage compelling experience and of the key users behavioral intentions which are important to SNS marketing strategies. Most of the work in service industries has focused on repurchase intentions as the focal dependent variable. There are multiple behavioral intentions, including positive recommending behavior and revisit intentions (Zeithaml et al. 1996). Since Hoffman and Novak (1996) proposed that the Internet services would benefit by facilitating what has been called the experience of "flow", many researchers have adopted flow construct to consumer behavior research. Flow construct can be a practical tool to understand users' perceived experience during SNS. However, most previous research on online services has focused on a single dimensional aspect of flow such as perceived enjoyment (Hsu & Lu 2004; Koo 2009). To date, we know relatively little about SNS users' subjective perception of the interaction with the SNS. We also know little about how users reach the state of flow through SNS. This study proposes four flow experiences such as perceived enjoyment, concentration, escape, and social interaction as predictors of intention to use SNS. This empricial study is expected to explain what would be the major flow experiences and their relationships with behavioral intentions toward SNS.

2   THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1   Social Network Sites (SNS)

Social network services have since proliferated, their features have expended in interesting ways, and overall membership has grown dramatically. Some SNS have become a vital channel for social interaction and attract the attention of information technology giants like Yahoo and Google. For example, Microsoft bought 1.6% of the shares of Facebook for $240 million in 2007. However, despite SNS is growing popularity, there has been limited research on consumer behavior with respect to SNS. As the pool of research on SNS keeps growing in communication and social psychology field, recent studies of SNS can be classified into three broad categories based on the academic fields adopted: (1) the influence of personality traits on SNS usage such as extraversion, neuroticism and

agreeableness (Correa et al. 2010; Ross et al. 2009); (2) demographic composition of SNS users, such as age and gender (Hargittai 2008; Thelwall 2008); and (3) the outcomes of SNS usage, such as enhanced social capital (Pfeil et al. 2008; Steinfield et al. 2008).

2.2 Flow experiences

Flow experiences are forms of intrinsic motivations. Flow is a highly enjoyable psychological state that represents ''the state in which people are so involved in an activity the noting else seems to matter'' (Csikszentmihalyi 1990, p.4). Flow is therefore a state without consciousness (usually characterised by a loss of a sense of time passing) that is experienced by individuals who are deeply absorbed in an activity they are enjoying (Webster et al. 1993). People experience a state of flow in a wide variety of activities, including sports, shopping, Internet navigation and playing online games (Hoffman & Novak 2009).

The conceptualization and measurement of flow have become important issues in assessing consumer behavior in the website (Huang 2006). However, there is no dogmatic application. Hoffman and Novak (2009) argue that, while it is a valuable construct, flow is too broad and ill-defined because of the numerous ways it has been operationalized, tested and applied. Numerous studies have applied flow to online environments, as presented in Table 1, which was adapted from Hoffman and Novak (2009). For example, Hoffman and Novak (1996) propose a conceptual model which provides insights into (1) what creates compelling online experiences (i.e., skill, arousal, interactivity, vividness and motivation); (2) the nature of flow experiences (i.e., involvement, focused attention, telepresnece and flow). Novak, Hoffman and Yung (2000) empirical tested this model and revise it based on validating the relationships. Most of subsequent research has expanded beyond their model. Chang and Wang (2008) adopted unidimensional approach by using a 5-item summed scale to measure intrinsic enjoyment, perceived control, and focus of concentration or attention. Rather than aggregating measures into a single construct, most researchers adopt a multi-dimensional approach to test whether a higher-order construct can be interpreted as flow. For instance, Sanchez-Franco (2006) view flow as second-order construct, comprised of enjoyment and concentration. Huang (2003) measured each of the constituent factors individually, including control, attention, curiosity and interest. Agarwal and Karahanna (2000) conceptualized flow as "cognitive absorption" with five factors of curiosity, control, temporal dissociation, enjoyment and focused immersion. Koo(2009) identifies experiential motives (similar to flow experiences) of playing online games as concentration, epistemic curiosity, enjoyment, escape, social affiliation.

Authors	Context	Antecedents	Flow
Agarwal & Karahanna (2000)	Information technology	Playfulness, personal innovativeness	2nd-order construct of "cognitive absorption" (curiosity, control, temporal dissociation, enjoyment, focused immersion)
Bridge & Florsheim (2008)	Online shopping	Telepresence, time distortion, arousal, challenge, skill, control, interactivity, importance	Not directly measured
Chang & Wang (2008)	Computer mediated environment	Perceived ease of use, interactivity	Unidimensional flow
Chou & Ting (2003)	Online game	Repetitive behavior	2nd-order construct (empathy, discovery)
Hausman & Siekpe (2009)	Website shopping	Usefulness, informativeness, entertainment	2nd-order construct (challenge, concentration, control, enjoyment)

Authors		Antecedents	Flow
Hoffman & Novak (1996)	Hypermedia computer-mediated environment	Skill/control, challenge/arousal, focused attention, interactivity, telepresnece, vividness	Unidimensional flow
Hsu & Lu (2004)	Online game	Perceived ease of use	Unidimensional flow
Huang (2003)	Website	Complexity, interactivity, novelty	Multi-dimensional construct (control, attention, curiosity, interest)
Koo (2009)	Online game	Not specific	Multi-dimensional construct (concentration, epistemic curiosity, enjoyment, escape, social affiliation)
Koufaris (2002)	Online shopping	Product involvement, web skills, search mechanisms, challenges	Multi-dimensional construct (concentration, perceived control, shopping enjoyment)
Moon & Kim (2001)	Website	Perceived ease of use	Multi-dimensional construct (concentration, curiosity, enjoyment)
Novak et al. (2000)	Online environment	Online tenure, skill, control, interactivity, chanllenge, arousal, importance, focused attention	Unidimensional flow
Wang et al.(2007)	Retail website	Arousal, socialness perception	2nd-order construct (control, attention, interest, curiosity)

Table 1.   Selected Studies on Characteristics of Flow

Hoffman and Novak (2009) expect that flow is qualitatively different from Web navigation and assert that SNS would be excellent candidates for flow research due to the extensive amount of time users spend in SNS. Here, the researcher conceptualizes flow as a multidimensional construct comprised of perceived enjoyment, concentration, escape and social interaction as they relate to the SNS context. Since flow indicates ''the holistic sensations that people feel when they act with total involvement'' (Csikszentmihalyi 1977, p. 36), this concept is assumed to have a key role particularly in users' perception of social-centric services such as the current SNS study. Evidence from flow studies has shown that perceived enjoyment is of key value to generate optimal flow. Perceived enjoyment is defined as the extent to which the activity is perceived to be enjoyable in it's own right aside from the instrumental value (Venkatesh 2000). SNS can be therefore viewed as interesting and entertaining, which taps into users' needs for aesthetic, pleasurable, and emotional experiences. Additionally, this study employs concentration which has been commonly used as flow experience in prior research. For users to be in a flow state, they must concentrate on their activities or experience total engagement where other attentional demands are ignored (Agarwal & Kim 2000; Koufaris 2002; Novak et al. 2000). If SNS users pay much attention to SNS usage to such an extent that there is little attention left to consider anything else, it is easier for them to acquire the flow experience (Ghani & Deshpande 1994; Hoffman & Novak 1996; Novak et al. 2000).

Although the meaning of interactivity may seem self-evident, the term has been applied to widely divergent field and has been defined in various ways (Huang 2003). Previous studies define the term

"interactivity" differently, such as related to a perception of speed while online (Bridges & Florsheim 2008), the extent of information exchange between a website and its users (Huang 2003). There is a social context to hedonic SNS which is not incorporated in current models of flow (Hoffman & Novak 2009). Hoffman and Novak (2009) argue that the extent and variety of interactivity in SNS is well beyond that of user interaction with the website only since SNS can provide a powerful and often affectively-laden context to user interaction. Indeed, SNS have opened numerous opportunities for users to socialize in ways no one could have imagined before. The most obvious motive for users to join a SNS is what McQuail (2005) defined as the need for integration and social interaction. Most of SNS users perform social activities via SNS such as forming friend list, communicating with fans members, chatting privately with others, sharing photo and emotions, and so forth. The various forms of interaction (e.g., personal interaction and machine interaction) often occur simultaneously with SNS context. Social interaction, here, refers to the extent to which a system allows individual users to cultivate, foster and maintain online relationships with others in their social network. The range of options for user connecting the others through SNS should significantly impact the flow experiences.

Users of SNS sometimes surf online for stress relief and alleviating a negative mood. Escapism is the aspect of emotions that allows the user to temporarily "get away from it all," often involving an element of "pretend" (Mathwick et al. 2001). Therefore, SNS could be acknowledged as a form of emotion-focused coping in response to stressful events or simply to get one's mind off a problem. It is similar to what Babin et al. (1994) recognized it as a "pick-me-up" and a "lift" when they feel depressed. Participants engage in activities that are absorbing and allow them to escape from the demands of the day-to-day world. Escape which is defined as the extent to which SNS users is perceived to be a relief from boredom and an escape from routine (Bloch et al. 1994).

Though the state of flow is temporal and highly subjective, during the stay with hedonic SNS, a strong sense of concentration, escape, social interaction and perceived enjoyment is developed. SNS service providers need to investigate the relationships between flow experiences and users' behavioral intentions to comprehend the concerns of users to attract them. Many studies have provided empirical support that flow directly influences behavioral intentions such as online purchase intentions (Hausman & Siekpe 2009; Luna et al. 2002, 2003); revisit intentions (Koufaris 2002; Hausman & Siekpe 2009; Luna et al. 2002, 2003); use intentions (Agarwal & Karahanna 2000); play online game intention (Hsu & Lu 2004; Koo 2009). This study focused on the most commonly referenced online behavioral intentions: intention to recommend website to others and intention to revisit, as these relate more directly to successful SNS.

The synopsis of prior work suggests that holistic experiences with SNS, as manifest in absorption and flow, are important explanatory variables in behavior theory. With this in mind, we believe that when SNS users are in the flow state, they might become absorbed in their online activities, their awareness is narrowed to the SNS, and they lose self-consciousness that leading them to be a releif from boredom and an escape from routine. The extant evidence suggests that following:

H_1: Perceived enjoyment is positively related to behavioral intentions toward SNS.

H_2: Concentration is positively related to behavioral intentions toward SNS.

H_3: Escape is positively related to behavioral intentions toward SNS.

H_4: Social interaction is positively related to behavioral intentions toward SNS

3 METHODOLOGY

3.1 Data Collection

To investigate the research model, an online survey technique was used to collect data. The survey was implemented over one month in 2010. In all, individuals with SNS experiences were asked to participate in the survey. For each question, participants had to circle the response which best described their degree of agreement. A total of 342 valid replies were used for the data analysis. Respondents ranged from 16 to 46 years old with a mean age of 26 and females outnumbered males (representing 53.8 per cent of the sample).

3.2 Questionnaire Design

A preliminary questionnaire was first developed in English, then translated into Chinese and retranslated several times until it was user friendly and captured the desired constructs. Once refined, the final instrument was collected using an online survey (http://www.my3q.com). Visitors to the survey website were instructed to complete the survey in terms of a social network site from which they had recently and frequently joined. All constructs were measured using multi-item scales which were borrowed from previous literature. The list of the items is represented in Table 2. All of the items were measured using 7-point Likert-type scales with anchors from "very disagree strongly" to "very agree strongly".

Construct	Items	Measure
Perceived Enjoyment (Enj)		
	P1	Using SNS is truly a joy
	P2	While using SNS, I experienced pleasure
	P3	The process of using SNS is enjoyable
	P4	SNS give me a lot of pleasure.
Concentration (Con)		
	C1	When using SNS, I don't realize the time elapsed
	C2	When using SNS, I am not aware of things happening around me
	C3	When using SNS, I often forget the work I must do
Escape (Esc)		
	E1	Using SNS gets me away from it all
	E2	To me, using SNS is a way to relieve stress
	E3	When I am bored, SNS is a good medium to pass time
	E4	When I am in a down mood, I use SNS to make me feel better
Social interaction (Soc)		
	S1	Using SNS expands my interpersonal relationship
	S2	Share opinions with others on this website

	S3	Developing relationships with others on this website
	S4	To know new friends without embarrassment on this website

Table 2.   Questionnaire items

There are multiple behavioral intentions, including customer loyalty, positive recommending behavior and repurchase intentions (Zeithaml et al. 1996). This study will adopt these distinct consequences of behavior in which loyal customers engage. A three-item behavioral intentions scale reflects the multiple dimensions of behavioral intentions, including 'willingness to recommend', and 'intention to revisit' (Zeithaml et al., 1996). The corresponding items for each respective dimension were: (1) "I am willing to recommend this SNS to my friends and relatives," (2) "I intend to continue to visit this website in the future," and (3) "I say positive things about this website to other people".

3.3   Analysis

The proposed model was analysed via Maximum Likelihood estimator of LISREL 8.8 by using the variance-covariance matrix of the measured variables as input (Joreskog and Sorbom, 1993). The analysis followed a two-step procedure based on Anderson and Gerbing's (1988) recommendations. First, we conduct confirmatory factor analysis to develop a measurement model that achieves an acceptable fit to the data. In the second step, we test the structural model by path analysis to demonstrate a meaningful theoretical model.

4   RESULTS

4.1   Confirmatory Factor Analysis

Analysis of the measurement part of the structural models before that of the structural parts is commonplace in customer behavior research, and was suggested by structural equation modeling theoreticians (Anderson & Gerbing 1988). A confirmatory factor analysis was run for the measurement model including the six latent constructs.

The measurement model had a χ^2 value of 357.896 (122 degrees of freedom), and the χ^2/d.f. ratio value of 2.934 was within the value of 3. Furthermore, the model fit also used following indices: Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Comparative-Fit-Index (CFI), Normed-Fit-Index (NFI), and root mean square error of approximation (RMSEA). As shown in Table 3, the model sufficiently meet the respective common acceptance levels suggested by previous research, demonstrating that the measurement model exhibited a good fit with the data collected, even though the goodness-of-fit observed is a little less than 0.90. RMSEA describes the discrepancy between the proposed model and the population covariance matrix. Since the value of RMSEA in this model was 0.075, the model meets the Steiger's recommendation that the values should be within the recommended cutoff values of 0.1 for good fit (Steiger, 1990). Therefore, we proceeded to evaluate the psychometric properties of the measurement model in terms of reliability and convergent validity.

The reliability of the measure is assessed using composite reliability and variance extracted estimates, as listed in Table 3. The composite reliabilities were calculated as: (square of the summation of the factor loadings)/ {(square of the summation of the factor loadings) + (summation of error variables)}. The interpretation of the resultant coefficient is similar to that of Cronbach's alpha, except that it takes into account the actual factor loadings rather than assuming that each item is equally weighted in the composite load determination. The composite reliability of each construct exceeded 0.8 in this study, satisfying the minimally acceptable level. On the other hand, the average extracted variances were all

above the recommended 0.5 level, which meant that more than one-half of the variances observed in the items were accounted for by their hypothesised factors.

Convergent validity can be assessed by factor loadings. Following Hair et al.'s (1998) recommendation, factor loadings greater than 0.5 were considered to be very significant. As can be seen in Table 3, all of the factor loadings of the items except S4 were greater than 0.7. In addition, if the factor loadings are statistically significant (t 2.0), we could consider convergent validity to be significant (Anderson & Gerbing 1988). The t-values for all indicators rang from 11.284 through 20.536, indicating that all factor loadings are highly significant at the 0.001 level. This fact provides evidence supporting the convergent validity of all indicators which effectively measure the same construct. Thus, all factors in the measurement model had adequate reliability and convergent validity.

Factor		Standardised factor loadings	t-value	Composite Reliability	Average extracted variance
Behavioral Intentions (BI)				0.821	0.605
	B1	0.795	16.518***		
	B2	0.829	17.498***		
	B3	0.705	14.033***		
Perceived Enjoyment (Enj)				0.845	0.576
	P1	0.734	15.291***		
	P2	0.771	16.342***		
	P3	0.769	16.234***		
	P4	0.762	16.106***		
Factor		Standardised factor loadings	t-value	Composite Reliability	Average extracted variance
Concentration (Con)				0.801	0.574
	C1	0.771	16.423***		
	C2	0.744	15.620***		
	C3	0.757	16.021***		
Social interaction (Soc)				0870	0.632
	S1	0.879	19.897***		
	S2	0.883	20.020***		
	S3	0.799	17.237***		
	S4	0.581	11.284***		
Escape (Esc)				0.910	0.717
	E1	0.887	20.536***		
	E2	0.871	19.968***		
	E3	0.832	18.565***		
	E4	0.793	17.237***		
Goodness-of-fit indices: (n= 342) CFI= 0.981 NFI=0.972 GFI=0.896 AGFI=0.854 RMSEA=0.0753					

***$p < 0.001$

Table 3.   Summary measurement statistic

4.2   Structural Model Results

The second step in the analytical process was to form the structural model by specifying the causal relations in accordance with the hypotheses. The hypotheses presented and tested seek to provide

answers to the following research question: What are the effects of flow experiences on users' behavioral intentions toward SNS? Table 4 summariszes the result of path analysis. A similar set of fit indices was used to examine the structural model. The results of the proposed model fitting exceeded or are close to standard criteria, as indicated by the GFI, AGFI, CFI and RMSEA values of 0.878, 0.831, 0.977 and 0.085, respectively. Good structural model fit exists when there is reasonably high explanatory power (measured by R^2), indicating the ability of the proposed model to explain variation in the endogenous variables. In the present study, R^2 value for behavioral intentions is 0.605. The proposed model achieves a fairly good fit.

We use the standardized path coefficient, which provides a comparison among variables of the magnitude of the association with the dependent variable in the model. Perceived enjoyment had a positive impact on behavioral intentions (β=0.411, p<0.01) in hypothesis 1. While concentration has no causal relationship with behavioral intention, hypothesis 2 is not supported. Escape was found to exert a positive influence on behavioral intentions (β=0.296, p<0.01) in hypothesis 3. Social interaction was a significant predictor in behavioral intentions (β=0.239, p<0.05), thereby confirming hypothesis 4. All path coefficients except concentration in the current model are statistically significant and are as hypothesised. More specifically, perceived enjoyment emerged as a more important antecedent to behavioral intentions than escape and socal interaction.

Path	Standardised coefficient estimate	Result
Enj BI	0.411***	H1 is supported
Con BI	-0.059(n.s.)	H2 is not supported
Esc BI	0.296***	H3 is supported
Soc BI	0.239**	H4 is supported
Goodness-of-fit indices: (n= 342)		
CFI= 0.977 NFI=0.967 GFI=0.977 AGFI=0.831 RMSEA=0.0847 SRMR=0.0485		

**p < 0.05, ***p < 0.001, n.s.: not significant

Table 4.   Structural model: standardised coefficient estimates and fit indices

5   CONCLUSION

SNS represent a burgeoning market sector with growth potential. A number of questions remain to be addressed concerning the stability of SNS as members join and leave. The question of what factors contribute to user behavioral intentions toward SNS is important. This study aims at developing and empirically validating a flow experiences model within the SNS context. We believe that the model is of particular significance for understanding compelling experiences in the contemporary SNS context. The empirical results show that behavioral intentions toward SNS is influenced by perceived enjoyment, escape and social interaction (R^2=60.5%). Concentration was not a significant predictor of behavioral intentions toward SNS and this is consistent with that of Koufaris(2002) and Koo (2009). This empirical study indicated that perceived enjoyment was the most important flow experience with SNS with a path coefficient of 0.411, followed by escape and social interaction. It means that SNS users focus on enjoying hedonic-oriented SNS for entertainment. SNS practitioners should offer more entertaining and playful services to evoke compelling user experience (i.e. flow) to increase positive behavioral intentions. For example, social games and applications of SNS can serve as a source of entertainment making SNS particularly attractive to users. Besides, SNS can help users to pass time/kill boredom when they are bored and enjoy online social interaction. SNS is under fast

development but researchers have paid little attention to this phenomenon. This topic is easy to dismiss, with simply stating that people use SNS to keep in touch with their offline friends; however, this would need much more research to make any conclusive decisions or theories.

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