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WHEN ADOPTION BRINGS ADDICTION: A USE-DIFFUSION MODEL FOR SOCIAL INFORMATION SYSTEMS

Completed Research Paper

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Abstract

Recently there has been a dramatic proliferation on the usage of social networking websites, blogs and other information systems that have a social orientation. However, there is limited research on what drives individual to use such information systems and moreover what are the outcomes of their usage.

This paper develops and empirically tests a model of user acceptance of social information systems. Taking into account the particular characteristics of these systems, the proposed model has several features that extend technology acceptance literature. Firstly, instead of the behavioral intention as the key dependent variable, the rate and the variety of use are used in order to model technology acceptance based on the use-diffusion theory. Secondly, exploiting a relational perspective of user-technology interaction the concept of user stickiness with an information system is investigated as usage outcome. Finally, the concept of addiction tendency is proposed to be another outcome modeling the excessive and intensive use of social information systems.

In order to empirically test the proposed model a survey with the participation of 456 facebook users is conducted. Results, analyzed with structural equation modeling, confirm study's hypotheses and show that social information systems could be a new field for theorizing about human behavior and technology.

Keywords: Social IS, Online Social Networking, Technology Acceptance, User Stickiness, Facebook

Introduction

With the increasing diffusion and penetration of Internet technologies, using Web sites has become an integral part of many individuals' social lives (Li et al. 2006). Many people now use Web sites as their sole source of news and information, and more and more people use the Web to search for and buy products and services. Moreover, blogs, on-line communities and social networking websites provide additional social outlets online. Social networking sites, like MySpace, Facebook, Friendster and LinkedIn are the latest technologies and trends in online communication (Ellison et al. 2007). They have become extremely popular in recent years and continue to attract a large number of users. Social networking sites grow 47 percent, year over year, reaching 45 percent of web users (Pfeil et al. 2009). Such sites allow users to upload their own images, music and videos to make them available for public use. Additionally, they encourage users to connect to other users on the site, establishing and/or maintaining a group of friends.

The appearance and the rapid diffusion of social networking sites has increased recently the interest of scholars from several disciplines to study user adoption and usage of information systems (IS) used for social purposes (Acar and Polonsky 2007; Cardon 2009; Ellison et al. 2007; Howard 2008; Hsu and Lin 2008; Pfeil et al. 2009; Rau et al. 2008). Notwithstanding the great popularity of these websites, research in information systems and technology acceptance literature regarding their diffusion is limited (Howard 2008).

Individual technology acceptance has been studied initially in the context of workplace (for a review see Venkatesh et al. 2003) and as business to consumer (B2C) e-commerce (Gefen et al. 2003; Pavlou 2003). In addition, technology acceptance has been studied in several other contexts or forms such as in personal and household contexts (Brown and Venkatesh 2005; Venkatesh and Brown 2001b) or in hedonic information systems (Van der Heijden 2004). Furthermore, researchers have noted that technology is embedded in a context and the context of use is an important aspect of understanding the technology and its use (Brown and Venkatesh 2005; Orlikowski and Iacono 2001). Therefore, information systems that applied in a social context, given their tremendous growth, are an important aspect of theorizing about technology.

Taking into account the specific nature and context of IS when studying technology adoption, Van der Heijden (2004) proposes a classification for information systems as hedonic and utilitarian, in line with consumer behavior literature that distinguishes between utilitarian and hedonic products (Hirschman and Holbrook 1982). According to the same author, hedonic systems aim to provide “*self-fulfilling value to the user*”, in contrast to utilitarian systems, which aim to provide “*instrumental value to the user*”. Under the similar logic, we can define as **social information systems** the emerging class of *systems that enable user to perform socially-related activities and aim to provide social value to the user* in contrast with utilitarian systems that aim to provide instrumental value and hedonic systems that used mainly for enjoyment and self-fulfilling purposes (p.696 Van der Heijden 2004). Example of social IS are the weblogs or instant messaging software. However, the most prominent and representative type of social IS are the social networking websites such as Facebook and MySpace.

The nature of social information systems acceptance has some important characteristics that distinguish them from other types of IS and necessitates to revisit and/or extending technology acceptance literature in order to study their acceptance.

Firstly, motivations related with individuals' social life and activities usually lead them to adopt and use social IS, instead of utilitarian or hedonic motivations that have been found to affect user adoption of other types of IS (Venkatesh 2000; Venkatesh et al. 2003). Unlike in other types of information systems, people in Social IS expect mainly to gratify social-emotional needs rather than informational or utilitarian needs, and they are connected in a person-to-person manner which is more direct and interpersonal (Rau et al. 2008). Therefore, socially-related type of antecedents should be included in the social technology acceptance models.

Secondly, the case of online social networks has shown that their adoption is usually followed by excessive and intensive use (Ross et al. 2009; Zhao et al. 2008). Sometimes, users that adopt online social networks spend so much time using them so as they neglect their job or personal life (Ross et al. 2009; Sheldon 2008). Therefore, the adoption diffusion (AD) paradigm that studies technology adoption by focusing only on the adoption perspective may be not efficient in explaining social technology diffusion. In contrast with the AD paradigm recent researches have suggested the use-diffusion paradigm that investigates technology diffusion taking into account the level and the type of usage (Shih and Venkatesh 2004). Furthermore, researchers in IS note that there is a dearth of research

that richly theorizes about different measures and conceptualizations of system use and their relationships with other outcomes (Burton-Jones and Straub 2006; Jasperson et al. 2005; Venkatesh et al. 2008)

Finally, users of social information systems develop a strong relationship with this websites and show an intensive loyalty to them, that some researchers label as user “stickiness” with a website (Li et al. 2006; Lin 2007). Consequently, acceptance of social information systems should be studied using a relational rather than a transactional perspective (Pavlou and Fygenson 2006)

The purpose of this paper is to theoretically develop and empirically test a conceptual framework that models user acceptance of social information systems by taking into account their particular characteristics.

This paper contributes to the information systems literature in the following ways:

1. It investigates technology adoption in the emerging class of social information systems.
2. It suggests three distinct types of determinants (utilitarian, social, hedonic) for the acceptance of social information systems.
3. It extends the investigation of technology diffusion from the adoption diffusion (AD) paradigm – that focuses on the technology adoption as the criterion variable- to the use-diffusion (UD) paradigm that takes into account the level and the variety of technology use.
4. It approaches user –technology interaction from a relational view and examines user intention to stick to a website
5. It includes in the information systems literature the concept of addiction tendency as a variable that modeling the tendency for excessive, obsessive, compulsory and generally intensive or problematic usage of technology.

The paper proceeds as follows: the next section discusses the research background regarding social information systems and develops study’s hypotheses. The next two sections present research methodology and results for the empirical study. The final section discusses research findings and implications.

Background and Theory Development

Social Information Systems and Online Communities

Social networking sites (SNS), like MySpace, Facebook, Friendster and LinkedIn are the latest technologies and trends in online communication. They have become extremely popular in recent years and continue to attract a large number of users (Bausch and Han 2006).

Facebook is a computer-mediated Social Networking System that has become one of the most popular means of communication in North America. Launched in 2004, Facebook had an estimated 1.2 million users in 2006 (Spitzberg, 2006) which grew to 250 million members in 2009 (Facebook.com 2009). The initial purpose of Facebook was to allow university students to create and maintain social ties which were relevant to the university experience

So far different approaches have been adopted to study factors affecting user participation in online communities of various kinds. Among others, researchers have adopted the theory of reasoned action (e.g. Hsu & Lin 2008), social capital and social cognitive theories (Chiu et al. 2006), as well as a “uses and gratifications” approach (Nambisan and Baron 2007) to understand drivers behind participation in online or virtual communities.

However, online communities exist not only for task-oriented communications, but also for personal relevant information sharing, trust and intimacy creation, and social relationships building. During the past five years, explicit social networking sites (SNSs) have expanded together with the wave of Web 2.0 technologies. These systems are designed specifically to help people build online presences and building social networks. Users’ active and public participation is critical to the success of such services. However, the motivation and behavior of people using such environments are supposed to differ from that in traditional online communities, and reasons why they post or lurk may also differ. Previous studies found that people do not post in online communities since their informational needs can be satisfied without posting. However, people rarely use online social network services solely to seek

information. Contrarily, social-emotional supports, friendship and intimate interactions are sought out in SNSs. In addition, people in SNSs are connected in a person-to-person manner, which is more direct and interpersonal than in other online communities.

Despite the phenomenal diffusion and growth of social networking sites the research of user acceptance towards this kind of information systems remains limited. Moreover, the particular characteristics of social information systems usage, such as excessive use and the development of a relationship between user and website necessitate the exploitation of new theories from different disciplines in order to study their adoption and usage.

Use- Diffusion Theory

In the innovation diffusion research, diffusion has traditionally focused on the adoption perspective (Rogers 1995; Shih and Venkatesh 2004). Researchers have labeled this as the adoption-diffusion (AD) paradigm, which examines the process by which an innovation reaches a critical mass of adopters, the diffusion is accelerated, and innovation is considered successful (Rogers 1995). Recently, researchers have pointed out the limitations of the AD model, stating that though diffusion processes cannot be understood without studying the nature of adoption, to complete the diffusion story, use-diffusion (UD) processes also need to be examined (Anderson and Ortinaa 1988; Golder and Tellis 1998; Robertson and Galignon 1986)

The theoretical considerations for the AD model include an S-shaped diffusion curve, speed of penetration and critical mass, and a two-step model of diffusion. The corresponding theoretical elements for the UD model are the evolving nature of use (rate and variety), sustained continuous use (or disadoption), and technology outcome considerations (technology integration and perceived essentialness of technology) (Shih and Venkatesh 2004). Therefore, while the variable of interest in the AD model is rate or time of adoption; in the UD model, the variable of interest is use or, more specifically, rate of use and variety of use.

Especially in the case of social information systems the use-diffusion approach could better model the varying levels of user adoption and usage of technology. Under this logic, we conceptualize usage of social information system as comprising two distinct dimensions: *variety of use* and *rate of use*. Variety of use refers to the different ways the product is used and it is conceptualized by the number of different applications an individual uses in his online social network. In this case, variety of use describes the width of use of a system. Usage rate refers to the time a person spends using the product during a designated period. Although it is conceivable that variety and use are correlated (i.e., the higher the variety, the higher the rate is), their exact relationship has not been empirically examined. Furthermore, different antecedent factors may influence rate and variety of use, and thus they should be treated as distinct.

H1. Usage rate of social information systems positively influences the variety of use

Determinants of Use-Diffusion for Social IS

Consistently with other technology acceptance models in a personal context, the developed model presents five determinants of usage of social IS grouped into three types: *utilitarian*, *hedonic* and *social* (Brown and Venkatesh 2005). Utilitarian determinants are most consistent with those found in the workplace. Among the most prominent determinants of utilitarian information systems is effort expectancy and performance expectancy (Venkatesh et al. 2003). Effort expectancy (Venkatesh et al. 2003) is defined as the degree of ease associated with the use of the system. Three constructs from the existing models capture the concept of effort expectancy: perceived ease of use, complexity, and ease of use. Performance expectancy (Venkatesh et al. 2003) is defined as the degree to which an individual believes that using the system will help him or her attain gains in job performance. The five constructs from the different models that pertain to performance expectancy are perceived usefulness, extrinsic motivation, job fit, relative advantage, and outcome expectations. A great body of IS literature (for a review see Venkatesh et al. 2003) have shown that effort and performance expectancy can predict technology acceptance.

H2. *Effort expectancy positively influences usage rate and variety of use of social information systems.*

H3. *Performance expectancy positively influences usage rate and variety of use of social information systems.*

Beyond utilitarian determinants social information systems use could be for hedonic purposes (Van der Heijden 2004). The role of fun has received some attention in the technology adoption literature via constructs such as enjoyment (Davis et al. 1992; Venkatesh 2000) and playfulness (Webster and Martocchio 1992). Although in

workplace settings the role of fun has been downplayed, applications for fun (hedonic outcomes) have been shown to be particularly relevant in the context of household PC adoption (e.g., Malone 1981; Venkatesh and Brown 2001).

H4. *Perceived enjoyment positively influences usage rate and variety of use of social information systems.*

Social determinants have also been proposed to affect technology acceptance. However, we can expect that factors related to social activities and social image of users will play a more dominant role in the case of social IS. *Social influence* is defined as the degree to which an individual perceives that important others believe he or she should use the new system (Venkatesh et al. 2003). Social influence as a direct determinant of behavioral intention is represented as subjective norm in several theories of technology acceptance and usage such as the theory of reasoned action (Fishbein and Ajzen 1975) and TAM 2 (Venkatesh and Brown 2001a), or as image in innovation diffusion theory (Rogers 1995).

H5. *Social influence positively influences usage rate and variety of use of social information systems.*

It follows then that usage rate and variety of use should be greater for websites that play a significant role in shaping their identity. Based on Carroll and Ahuvia (2006) we formally define self-expression as the consumer's perception of the degree to which the specific information system enhances one's social self and/or reflects one's inner self. Therefore we expect that self-express will be related both with the usage rate and the variety of use.

H6. *Self-express positively influences usage rate and variety of use of social information systems.*

Relational View of User-Technology

Relationship principles have virtually replaced short term exchange notions in both marketing thought (Webster 1992) and technology research (Li et al. 2006). Recently, a *relational* view of user-Web site interactions (or on-line business-to-consumer [B2C] relationships) has emerged in e-commerce research and information systems (IS) literature (Li et al. 2006). As a transition from the transactional view (satisfaction paradigm) of user-Web site interaction, the relational view aims to examine social and psychological factors (such as trust) in on-line B2C interactions (e.g., Gefen et al. 2003)).

An approach regarding user's strong relationship with an information system is the concept of user "stickiness" with a website (Li et al. 2004). Some users, however, "stick" to a specific Web site (e.g., CNN.com, Amazon.com, or KBB.com) and do not switch to others that provide similar services or content (e.g., MSNBC.com, BN.com, or Edmunds.com), whether from lack of motivation or simple inertia (Li et al. 2006; Lin 2007). Stickiness is the ability of websites to draw and retain customers (Zott et al. 2000) so that they will buy goods/ services, or view more advertisements (Koh and Kim 2004). This ability has been recognized as one of the keys to profitability.

In the case of social information systems, the alternatives are not so many. However, there are still options for users to switch to another social networking site or use it in parallel. User stickiness in a specific social website is therefore important also in social context. Actually, users tend to develop stronger relationships with social websites because their usage imply more personal involvement and investment (Li et al. 2006). Previous studies in e-commerce and marketing have shown that the more the consumer uses a product or a technology the more possible is to become loyalty with it (Li et al. 2006; Lin 2007; Shih and Venkatesh 2004).

H7. *Usage rate and variety of use positively influence user stickiness with social information systems*

Another important aspect of the relationship between user and social websites is that they develop a form of relationship with the website (Rau et al. 2008). Actually, the relationship with the website is a reflection of the possibility that the information system provide to them to express their self and develop relationship with others (Rau et al. 2008; Zhao et al. 2008). Furthermore, several relationship theories have shown that the level of commitment is the most direct and powerful predictor of persistence in a relationship (Li et al. 2006). Therefore we expect that emotional attachment as an expression of commitment affects user relationship with the social websites.

H8. *User emotional attachment positively influence user stickiness with social information systems*

Intensive Use of Web and Internet Addiction

As Hannemyr (2003) has empirically demonstrated, "the adoption rate of the Internet has exceeded that of earlier mass communication technologies by several magnitudes," making it an "irreversible" innovation. Studies have also

shown that an important consequence of an entire generation of our nation's youth growing up with the Internet is that Internet use is gradually displacing television as their main source of entertainment, communication and education (Lenhart, et.al. 2001). Hoffman et al. (2004) investigate in their study if the internet has become indispensable for users. The idea is that the Internet has become so embedded into the daily fabric of people's lives that they simply cannot live without it.

Notions similar to indispensability have been researched in consumer environments by various scholars who have used equivalent terms such as "necessities", "essential products," or "products one cannot do without." According to Hoffman et al. (2004) something becomes indispensable if it becomes part of one's daily routine. Daily routine (examples include reading a newspaper, watching the news on television, checking one's email) leads to standardization of activities (for example, reading the morning paper, watching the evening news, checking one's email each day during breakfast).

On the other hand, researchers in media psychology note that game addiction is currently one of the most discussed psychosocial aspects associated with playing computer and videogames (Grosser et al. 2007). There is considerable disagreement among researchers about the concept of "internet or game addiction". Although the term addiction is not used by clinical psychologists, game addiction is the most prevalent term among researchers to describe excessive, obsessive, compulsive, and generally problematic use of videogames (Lemmens et al. 2009). Game addiction is currently one of the most discussed psychosocial aspects associated with playing computer and videogames (Grosser et al. 2007; Klimmt et al. 2009; Lemmens et al. 2009).

In the case of social information systems excessive and intensive use has been noticed by several researchers, but also from magazines and newspapers. Adolescents, but also adults, usually engaged in online social networking activities during their working hours or school (Sheldon 2008). Although addiction is a clinical term used mainly from psychologists to describe a disease we use the term *addiction tendency*, in parallel with game addiction tendency, as a "more light" way to describe and conceptualize intensive and excessive engagement in the usage of social information systems. Consequently, similar to other researchers in other contexts, we predict that the usage rate as well as the variety of use will have a relationship with user tendency to addict with social IS.

H9. *Usage rate and variety of use positively influence user tendency for addiction with social information systems*

Hoffman and Novak (1996) argue that the success of online marketers depends on how well their Web sites encourage consumers' flow states. Flow is a psychological state that people reach during engagement in activities (Novak, Hoffman, and Yung 2000). In a computer-mediated environment, flow is characterized by a seamless sequence of responses facilitated by machine interactivity. Consumers who are in a flow state tend to enjoy their online experience more and stay online longer than those who are not in a flow state (Hoffman and Novak 1996). It is therefore expected the user who are in flow state when using a social IS will have a stronger relationship and a more intense use of the system. Moreover users who have an emotional attachment with the system are possible to use it intensively and excessively. Based on this argumentation we formulate the last three study's hypotheses.

H10. *User flow positively influence user tendency for addiction with social information systems*

H11. *User flow positively influence user stickiness with social information systems*

H12. *User emotional attachment positively influence user tendency for addiction with social information systems*

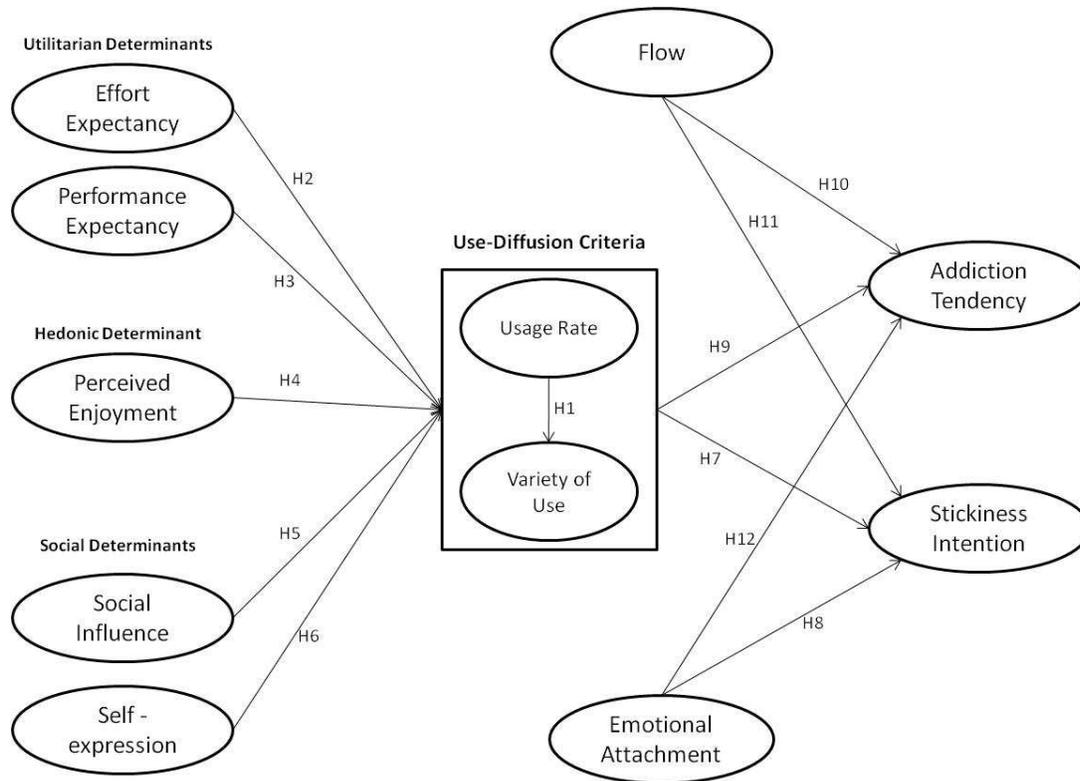


Figure 1. A Model of Acceptance of Social Information Systems

Research Methods

Data collection and Sampling

The population of the study was users of facebook. The sampling frame was undergraduate and postgraduate students of a European University. In order to collect data a facebook group named “*tell us your opinion about facebook*” was created and an online questionnaire was posted in this group. This group was communicated through appropriate mailing lists to students. 625 members joined this group and 480 of them completed the questionnaire. The partially completed questionnaires were excluded leaving a usable sample of 456 facebook users.

Measures

Measures of the research were based on self-report scales mainly adopted from the existing literature. The constructs were measured on 7-point likert scales. Performance expectancy, effort expectancy and social influence were adapted from UTAUT model to the social context (Venkatesh et al. 2003). Enjoyment was measured using the scale of Davis et al (1992). Systems usage was measured according to the suggestions of use-diffusion theory. Usage rate was operationalized as the weekly frequency of use and variety of use was operationalized by two items reflecting the number of applications and number of friends. Addiction intention was measured based on the game addiction scale developed by Lemmens et al (2009), while stickiness intention items were adapted by Li et al (2006). The wording of these items was slightly changed to depict more clearly and distinctly the content of stickiness as an intensive loyalty construct. Self-express and emotional attachment were adapted from Carroll and Ahuvia (2006). Finally, for the flow measure a shorter version of the scale proposed by Novak et al.(2000) was used. Table 2 presents a summary of the study variables.

Table 2. Summary of Variables

Variable Name	Description/Source	Items
Effort Expectancy	The degree of ease associated with the use of the system (Venkatesh et al. 2003)	Facebook is easy to use I can easily understand how to use facebook
Performance Expectancy	The degree to which an individual believes that using the system will help him or her improve the performance related to social activities (Venaktesh et al. 2003)	Using facebook is useful for my social life Facebook makes my social activities more efficient
Enjoyment	“The extent to which the activity of using the system is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis et al. 1992)	When using Facebook I feel entertainment Facebook is enjoyable
Social Influence	The degree to which an individual perceives that important others believe he or she should use the system (Venkatesh et al. 2003)	People who influence my behavior think that I should use facebook My friends and relatives use facebook
Self-Express	The degree to which the specific system enhances one’s social self and/or reflects one’s inner self (Carroll and Ahuvia 2006)	Facebook reflects my personality Using facebook express myself
Usage Rate	The time a person spends using the system during a designated period (Shih and Venkatesh 2004)	Frequency of visit
Variety of Use	The different ways the system is used (Shih and Venkatesh 2004)	Number of friends Number of applications
Emotional Attachment	A strong relationship with the system so as to warrant maximum efforts to maintaining it (Carroll and Ahuvia 2006)	I feel attached to facebook I will feel upset if facebook disappears in the future
Flow	A psychological state that users reach during engagement in using the system (Novak, Hoffman, and Yung 2000)	Browsing on facebook excites my curiosity. When navigating on facebook, I felt in control. When navigating on facebook I am totally absorbed in what I was doing.
Stickiness Intention	A deeply held commitment to reuse the system consistently in the future, despite situational influences and marketing efforts that have the potential to cause switching behavior” (Li et al. 2006)	I plan to keep using facebook in the future I would continue use facebook if another new similar site appeared I would use facebook even if I had to pay something for it
Addiction Tendency	“Tendency for excessive, obsessive and intensive use of the system ” (Lemmens et al. 2009)	I would describe myself as “addicted” to Facebook Facebook is necessary for my life It is very difficult for me to stop using the facebook

Results

We used partial least squares to analyze the data (Chin 1998; Venkatesh and Morris 2000). The exploratory nature of our study make PLS appropriate for data analysis. Moreover, PLS is particularly useful for our study because it is robust to non-normal data distribution (Chin 1998). We followed the guidelines specified in Chin (1998) and other exemplars in IS research (e.g., Venkatesh et al. 2003, 2008). With the exception of usage rate, all constructs were modeled using reflective indicators.

Assessments of Measures

We tested our measurements for internal consistency, convergent and discriminant validity employing the testing system recommended by Fornell and Larcker (1981). Internal consistency of our constructs is acceptable since all the reliabilities - as measured by composite reliability indicator- exceed the 0.70 guideline that Nunnally (1978) recommends. According to Gefen and Straub (2005) convergent validity is shown when each of the measurement items loads with a significant t-value on its latent construct. Typically, the p-value of this t-value should be significant at least at the 0.05 alpha protection level. According to the loadings results t-values for all loadings (based on bootstrap procedure) make them significant at 0.05 level. Finally, discriminant validity is shown when the PLS indicators (a) load much higher on their hypothesized factor than on other factors (own-loadings are higher than cross loadings), and (b) when the square root of each factor's Average Variance Extracted (AVE) is larger than its correlations with other factors (Gefen and Straub 2005). Table 3 shows measurement model results.

	CR	1	2	3	4	5	6	7	8	9	10	11
1. Addiction Tendency	.86	.67										
2. Emotional Attachment	.88	.70	.79									
3. Effort Expectancy	.70	.33	.24	.54								
4. Enjoyment	.77	.22	.19	.2	.64							
5. Flow	.84	.60	.52	.37	.31	.64						
6. Performance expectancy	.77	.44	.41	.14	.30	.30	.63					
7. Usage Rate	1	.43	.30	.32	.23	.30	.26	N/A				
8. Self-Express	.85	.41	.45	.23	.70	.36	.34	.24	.74			
9. Social Influence	.76	.29	.25	.31	.27	.29	.14	.27	.23	.62		
10. Stickiness Intention	.86	.48	.43	.27	.30	.47	.30	.31	.29	.21	.68	
11. Variety of Use	.84	.36	.27	.28	.15	.22	.25	.37	.18	.26	.22	.72

Structural Model

Table 5 shows the PLS results for the structural model. As shown in this table our model explains a significant amount of variance for our dependent variables. Specifically, the model explained around 20 percent of the variance usage rate and variety of use, 30 percent of the variance of stickiness intention and 60 percent of the variance of addiction tendency.

We predicted that usage rate will influence variety of use and as shown in table 5 usage rate has a significant effect. Thus H1 is supported. Regarding the determinants of usage rate and variety of use all effects of predicted factors found to be significant on both use criteria, apart from enjoyment and self-express effects on variety of use. However, their effect on usage rate was significant. Therefore, H2, H3 and H5 are accepted, while H4 and H6 are partially accepted. Regarding the outcomes of system use criteria they have significant effects for addiction tendency but only usage rate found to affect significantly stickiness intention. Therefore, H9 can be fully accepted and H7

partially. Finally, flow and emotional attachment coefficients on stickiness intention and addiction tendency were all significant, supporting H8, H10, H11 and H12.

Table 5. Structural Model Results - Parameter Estimates				
	Dependent Variables			
	Usage Rate (R ² =.20)	Variety of Use (R ² =.22)	Stickiness Intention (R ² =.31)	Addiction Tendency (R ² =.60)
Effort Expectancy	.22**	.10**		
Performance Expectancy	.19**	.11**		
Enjoyment	.15**	.02		
Social Influence	.16**	.10*		
Self-Express	.11*	.01		
Usage Rate		.17**	.07**	.08**
Variety of Use			.04	.08**
Emotional Attachment			.13**	.28**
Flow			.29**	.26**

*p < 0.05, **p < 0.01

Conclusion and Discussion

The phenomenal diffusion and growth of information systems with a social orientation was the motivation of this research. In parallel with marketing and technology acceptance literature that classifies products or information systems according to their context or purpose of use, we defined as social information systems all these systems that provide social value for the user and support his social life activities. This paper develops and tests a conceptual framework that models user acceptance of technology in the emerging class of social information systems. The particular characteristics of social information systems lead authors to exploit the paradigm of use-diffusion instead of adoption diffusion in order to model technology acceptance. Based on this paradigm and on several other theories from technology adoption, marketing and electronic commerce, sociology and media psychology we proposed utilitarian, hedonic and social factors as antecedents of user acceptance of social information systems. Moreover, outcomes of use of social information systems are considered.

Results confirm most study's hypotheses and show that social information system is a distinct class of IS that new constructs need to be exploited in order to study it. Specifically, apart from utilitarian – i.e. effort and performance expectancy – and hedonic - i.e. perceived enjoyment- variables another group of antecedents, with social perspective, have been shown to affect user acceptance of social IS. Therefore, social influence and self-express had a significant effect both on usage rate and variety of use. In addition, the adoption of social information systems – as it is captured by the usage rate and variety of use variables- has an effect on user addiction tendency and stickiness with these systems. Finally, users' emotional attachment with the website and their flow when using them has an effect on their stickiness intention and addiction tendency respectively.

This paper provides useful research and managerial implications. Firstly, it extends the investigation of technology diffusion from the adoption diffusion (AD) paradigm – that focuses on the technology adoption as the criterion variable- to the use-diffusion (UD) paradigm that takes into account the level and the variety of technology use. In contrast with most technology adoption models (see Venkatesh et al. 2003) this paper does not use intention to use as the key dependent variable of technology acceptance, instead it uses the rate of usage and variety of use as the key

dependent variables. Going a step further, it approaches user –technology interaction from a relational view and examines user intention to stick to a website. Finally, the current paper includes in the information systems literature the concept of addiction tendency as a variable that modeling the tendency for excessive, obsessive, compulsory and generally intensive or problematic usage of technology.

The developed model can be the baseline for new research on information systems. Future research can exploit and extend the current model in both social and other contexts of information systems adoption.

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