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ABSTRACT

The use of social networks has grown phenomenally in the past decade making these networks an important part of individuals' lives and organizations' interests. The growth and development of mobile technology led to a complete transformation in the means and purposes of using social networks. Despite the abundance of research on the use of social networks, there is a lack of research in the area of mobile-enabled social networks, social networks accessed using mobile devices. In this paper, we study factors influencing individuals' intention to use mobile-enabled social networks. Specifically, we focus on studying the role of mobile device related factors including perceived device benefits and emotional attachment using a research model that uses theory of planned behavior and innovation diffusion theory as research framework. The potential contribution of this research includes understanding users' participation in mobile-enabled social networks and why users prefer this type over traditional social networks.

Keywords

Social networks, Mobile computing, Mobile-enabled social networks, Emotional attachment.

INTRODUCTION

Social network sites (SNS) are Internet-based services where users can create personal profiles, connect to other users, and share content with their network of connections (Ellison 2007). The growth in users' participation in SNS in the past decade has been phenomenal with the increase of Internet users' participation in SNS from less than 8% in 2005 to more than 67% in 2012 (Wilson et al. 2012).

The growth of smart mobile devices use and high speed mobile Internet access made the extension of mobile access of traditional SNS possible. Because of the emotional attachment of mobile devices, the introduction of SNS applications to mobile devices did not just enhance SNS users' experience through added capabilities such as image and location sharing, they transformed the use of SNS from traditional purposes such as enjoyment and enhancing relationships to new and innovative purposes that exploited mobile capabilities to reach every aspect of life.

The transformational mobile capabilities led to the creation of specially designed mobile social network (MSN) such as *foursquare* location sharing service and *Whatsapp* mobile messaging application. These networks are specifically designed for mobile users and which depend on using mobile capabilities including cameras, GPS sensors, and ubiquitous connectivity.

There are increased research interests in the factors that affect user adoption of social networks (Kwon and Wen 2010). However, there is a lack of studies devoted to mobile-enabled social networks (Yamamichi 2011). In addition to this gap in literature, the growing use of mobile technology to participate in social networks is worth studying for several practical reasons; first, social networks advertising has become an important marketing tool for businesses and the main source of income for SNS. Mobile advertising now represents the biggest percentage of this revenue. For example, in the first quarter of 2014, mobile advertising represented fifty nine percent (59%) of Facebook advertising revenue of 2.27 billion dollars (Facebook 2014). Therefore, it is important to study factors influencing the use of mobile participation in mobile-enabled social networks and hence build mobile applications that can attract more users and generate more revenue.

Our objective in this study is to understand why users prefer mobile-enabled social networks. Specifically, we attempt to answer the following questions: (1) What is the role of device emotional attachment in motivating participation in mobile-enabled social networks? (2) What is the role of users' perception of mobile benefits in encouraging participation in mobile-enabled social networks?

LITERATURE REVIEW

Social Networks and Mobile Service Adoption

Mobile-enabled social networks are a type of social networks and a type of mobile services as well. There are studies on social networks adoption as well as mobile services adoption in existing literature. The adoption of social networks has been studied with factors including perceived usefulness (Kwon and Wen 2009), enjoyment (Lin and Lu 2011), relationship maintenance (Tosun 2012), self-expression (Tosun 2012), personality traits

(Skues et al. 2012), social influence (Cheung et al. 2010) and trust, security and privacy concerns (Shin 2010). The adoption of mobile service has been studied with factors including perceived usefulness, perceived ease of use, social influence (Hong and Tam 2006), trust, security and privacy (Chen et al. 2008), to specific features of mobility, ubiquitous access (Yuan et al. 2010), context awareness (Xu and Yuan 2009) and location based services. However, there is a lack of studies that integrate both dimensions of mobile-enabled social networks

Mobile Device Emotional Attachment

Generally speaking, emotional attachment can be defined a strong emotional bond between a person and an object (Bowlby 2012). This emotional bond has been heavily studied in psychology and marketing literature (Thomson et al. 2005) and has been associated with the need for proximity with objects and dependence on these objects (Hazan and Zeifman 1999). The effect of emotional attachment on relationship with objects has been confirmed by neurological studies showing that when a person is emotionally attached to an object, being close to this object affects brain parts responsible for empathy and benefit expectation (Güroğlu et al. 2008; Ida Gobbini et al. 2004).

We define mobile emotional attachment as the relationship between individuals and their mobile phones that has been appropriated, and singularized through person-phone interaction. This definition reflects the personal relationship that is created between users and mobile phones. Wehmeyer (2008) proposed that mobile device emotional attachment is created as a result of the necessity of mobile device in an individual's life, the symbolism of mobile device, and the aesthetic features of the device such as shape and color.Vincent (2006) explored mobile emotional attachment and found that emotional attachment is created because of users' dependability on mobile phones to communicate with family and friends. The use of smart phones is likely to enhance this emotional attachment given the multitude of mobile applications on which user currently depend. Therefore, the emotional attachment is not only created by the characteristics of the mobile device hardware, but with the applications and information on which users depend.

Beliefs and Attitudes towards Object and Behavior

In the context of behavioral research, there is a distinct differentiation between attitudes and beliefs towards behavior and those towards objects used to perform this behavior. For example, Ajzen (2005) proposed that in order for attitudes and beliefs to predict a behavior, they

should be specified consistently with that behavior in terms of time, context, and target. On the other hand, attitudes and beliefs about objects are related to the features of these objects and affection towards them and are not related to any specific behavior. For example, one may like some technological characteristics of a new car model such as high speed but would have a negative attitude towards driving this car because it is not suitable for busy city streets or because it is risky to drive. In information systems research, different technology adoption theories such as Technology Acceptance Model (TAM) (Davis 1989) used beliefs directly related to system use (target behavior) to predict this behavior, with attitudes towards objects having a weak influence on behavior (Wixom and Todd 2005).

Theory of Planned Behavior (TPB) and Innovation Diffusion Theory (IDT)

TPB (Ajzen 1991) was developed as a general behavior theory that explains factors which influence different behaviors. According to this theory, behavior is predicted by the intention to perform the behavior which is in turn influenced by attitudes towards behavior, social influence, and perceived behavior control (PBC). Attitude, PBC and social influence are influenced by beliefs about behavior. TPB has been extensively used in IS to predict use and acceptance behavior in different contexts (Pavlou and Fygenson 2006). TPB played an important role in developing different technology acceptance models such as TAM (Venkatesh et al. 2003).

IDT was developed by (Rogers 1983) to study the adoption of innovations in different contexts (Rogers 2010). Originally, IDT proposed that certain innovation characteristics including its relative advantage, complexity, compatibility, trialability, and visibility influence the adoption of this innovation. IDT has been extensively used in IS adoption research both independently and by integrating it with other acceptance models. For example, Agarwal and Prasad (1997) used IDT with voluntariness to examine the acceptance of world wide web while Moore and Benbasat (1996) integrated IDT with theory of reasoned action (TRA) to examine IS acceptance in organizations.

As we mentioned earlier, mobile-enabled social networks are not a simple extension to traditional SNS but rather a significant and unique motivation that transformed the use of social networking. Therefore, we use IDT constructs to represent beliefs influencing TPB attitudes and PBC. Furthermore, we extend this model by including mobile device beliefs and attitudes as antecedents of IDT beliefs.
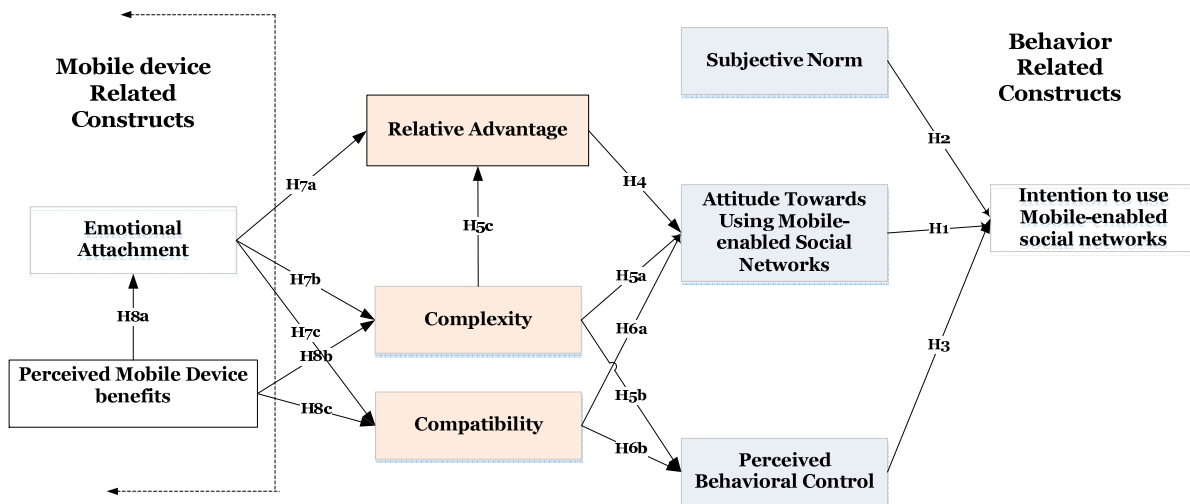
RESEARCH MODEL

Figure 1. Research Model

Factors inference Mobile-enabled Social Networks Use based on TPB

Attitudes towards Using Mobile-Enabled Social Networks

Attitudes towards behavior represent the motivational factor for performing the behavior, and they refer to the value an individual associates with performing a behavior (Ajzen 1991). Attitude has been found to predict intention to perform a behavior in numerous contexts (Sheppard et al. 1988) including IS context (Liker and Sindi 1997; Pavlou and Fygenson 2006). Following these previous studies, we propose that: *H1: Attitude towards using mobile-enabled social networks is positively related to the intention to use these networks*

Subjective Norm

Subjective norm is the social pressure to perform a behavior (Ajzen 1991). In this research context, subjective norm refers to how individuals' perception of whether mobile-enabled social network use is accepted, encouraged, and performed by the important others. Research found social norm to be an important factor that influences intention towards system use (Straub et al. 1999). Moreover, one of the main reasons behind users' participation in mobile-enabled social networks is to enhance off-line relationships and communicate with existing friends (Lin and Lu 2011; Wilson et al. 2012) which implies the role of important others in encouraging the use of social networks. Therefore, we propose that: *H2: Subjective norm has a positive relationship with the intention to use mobile-enabled social networks*

Perceived Behavioral Control

PBC is individuals' perceived control over doing the behavior (**Ajzen 1991**). This constructs reflects both the opportunity and facilitating conditions to engage in a behavior. **Venkatesh et al. (2012**) found a positive relationship between facilitating conditions and consumer intention to use mobile technology. In our context, it is not enough for participants to have a positive attitude towards using mobile-enabled social networks. They should also believe they have the opportunity and the means to participate such as the time and technological tools. Therefore, we propose: *H3: PBC has a positive relationship with the intention to use mobile-enabled social networks*

Factors influence innovation diffusion based on IDT

Perceived Relative advantage

We define perceived relative advantage as users' perceived enhancements in social interactions quality from using mobile-enabled social networks over traditional SNS. Mobile-enabled social networks enhance the benefits of traditional SNS. For example, when users are able to browse their friend's profiles ubiquitously instead of being limited to their homes or offices, their enjoyment from performing this activity increases. When users are able to share their location and their videos to demonstrate their status, this enhances their capability to express their perceived identity and hence their self-expression. Moreover, as mentioned earlier, mobile-enabled social networks enable new types of social network use such as requesting help or disseminating events. Therefore, mobile-enabled social network use may provide a real advantage over traditional SNS participation. Hence: *H4: Perceived relative advantage is positively related to attitude towards using mobile-enabled social networks*

Complexity

Complexity refers to the degree to which the use of mobile-enabled social networks is perceived as difficult (Moore and Benbasat 1991). Complexity has been shown to influence attitude towards use (Davis 1989). Therefore, we propose: *H5a: Complexity is negatively related to attitude towards using mobile-enabled social networks*

Complexity is also negatively related to PBC. For example, in e-commerce settings, Pavlou and Fygenson (2006) found that perceived ease of use is positively related to PBC. In this study, we propose that when users perceive mobile-enabled social networks use to be complex, they are likely to perceive less control over it, or: *H4b: Complexity is negatively related to PBC*

Moreover, prior IS studies found a positive relationship between ease of use, the opposite of complexity, and perceived usefulness (Venkatesh et al. 2003). In mobile-enabled social networks context, the easier use the higher the relative advantage perceived by users. Therefore, we propose that: *H5c: Mobile-enabled social networks use Complexity is negatively related to perceived relative advantage*

Compatibility

Compatibility is the degree to which using mobile-enabled social networks is perceived as consistent with users' experience, values and past behaviors. Moore and Benbasat (1996) found compatibility positively influence attitude. The use of mobile-enabled SNS can be compatible with previous use of mobile devices, as well as previous use of traditional SNS. For example, participants use authoring tools to participate and share their status on social networks. They use the same set of tools for other applications such as navigation, messaging, and capturing images. Moreover, mobile-enabled social networks use, whose primary function is to communicate with existing friends (Raacke and Bonds-Raacke 2008), is consistent with the primary use of mobile phones in communicating with family and friends (Vincent 2006). Therefore, we expect compatibility to have a positive relationship with attitude towards using mobile-enabled social networks. Or: *H6a: Compatibility is positively related to attitude towards the use of mobile-enabled social networks*

Moreover, When users perceive use of mobile-enabled social networks to be compatible with their day-to-day use of mobile devices, for example by using the same mobile features, they are likely to perceive more control over use or: *H6b: Compatibility is positively related to PBC.*

Attitude towards object of Mobile Device

Emotional Attachment

Emotional attachment is a strong affection towards the mobile device resulting from its personalized nature and

from users' dependence on that device (Wehmeyer 2008). The relationship between affect and beliefs has been studied before in IS and behavioral science. For example, Ajzen and Fishbein (1980) proposed that the influence of attitude towards an object (such as device attachment) on behavior is fully mediated by beliefs about the behavior itself. In IS literature, satisfaction, an affection towards a system, is found to influence beliefs about the usefulness and ease of using this system (DeLone and McLean 1992; Wixom and Todd 2005). Therefore, we propose that: *H7a: Emotional attachment is positively related to the relative advantage of mobile-enabled social networks*

Moreover, when users are emotionally attached to their mobile devices, they prefer to be in proximity with their devices (Hazan and Zeifman 1999), and therefore they are more likely to use their devices as a habit and hence perceive the devices as easier to use or less complex (Ouellette and Wood 1998). Thus, we propose *H7b: Emotional attachment is negatively related to the complexity of using mobile-enabled social networks*

Emotional attachment also reflects the dependence of users on their mobile devices (Vincent 2006) and hence, they represent a strong user value that mobile devices are dependable in communicating with others and in social activity. Therefore, we propose that emotional attachment positively influences compatibility or: *H7c: Emotional attachment is positively related to the compatibility of mobile-enabled social networks*

Users' Perceived Mobile Device benefits

In this study, we define perceived mobile device benefits as the degree to which mobile users perceive the set of mobile device attributes and functions as important and distinct from other types of IT artifacts. Mobile devices have several unique benefits such as ubiquitous communications, processing power that they can access from anywhere, a set of integrated authoring tools that enhance users' experience and so on (Yuan et al. 2010). We propose that when users perceive those mobile device benefits as important, their dependence on mobile devices and hence their attachment to these devices will increase. This relationship is supported by previous research on the relationship between information system attributes and satisfaction with this system (Wixom and Todd 2005) therefore we propose, *H8a: Perceived mobile device benefits positively influence emotional attachment*

Moreover, since users utilize mobile device benefits in their day to day use such as in communicating with friends, accessing their e-mail and taking images, they are likely to be used to using these features and hence they are likely to find mobile-enabled social networks less complex to use and compatible with their day-to-day use of mobile devices. Hence, *H8b: Perceived mobile device benefits negatively influence mobile-enabled social networks complexity. H8c: Perceived mobile device benefits positively influence mobile-enabled social networks compatibility*

METHODOLOGY

In order to answer our research questions, we will survey mobile users of Facebook.com. We chose Facebook.com because it represents SNS which extended their service to use mobile applications. Our construct measures will be adapted from existing measures to the context of using mobile technology in SNS participation, or developed by ourselves where no previous measures exist. All items will be measured using a 7-point Likert scale. We will use partial least squares (PLS) to test our hypothesized model. The outcome of the analysis will be used to verify the relationships in our model. PLS is chosen because of its accuracy and suitability for exploratory studies like this one (Gefen et al. 2000).

CONCLUSION

In this study, we presented a model based on TPB and IDT to explain the role of perceived mobile device benefits and mobile device emotional attachment in enhancing mobile-enabled social networks use. Our proposed model has several potential theoretical and practical outcomes. Theoretically, the model links mobile device related beliefs and emotion to mobile-enabled social networks use which, to the best of our knowledge, has not been done before. The model also signifies the role of mobile related constructs in enhancing compatibility between using mobile-enabled social networks and the use of day-to-day mobile activities. Practically, by linking device related constructs and use, we can create applications that exploit mobile device idiosyncrasies to associate mobile-enabled social networks use with mobile device emotional attachment and perceived benefits and hence enhance these networks use. Our research may be enhanced by observing the users real activity in addition to questionnaires.

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