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Abstract

Purpose – Building upon studies of value theory and social psychology literature, the purpose of this paper is to empirically test a research model that incorporates antecedents of value (mobile convenience, service compatibility, security risk, and cognitive effort) and mobile value (utilitarian and hedonic value), and social influence (social norms and number of peers) to examine factors affecting user intention toward mobile social networking sites (SNSs).

Design/methodology/approach – The proposed model was empirically evaluated using survey data collected from 318 users on their perceptions of mobile SNSs. A structural equation modeling (SEM) was used to assess the relationships of the research model.

Findings – The results revealed that mobile convenience, service compatibility, security risk, and cognitive effort have a significant and indirect impact on the user acceptance of mobile SNSs through their respective paths on hedonic value and utility value.

Practical implications – Mobile SNSs practitioners should focus on enhancing users' mobile value through perceived benefits, lower perceived costs, and simultaneously developing social influence to further boost users' intention to use for mobile social networking services.

Originality/value – This study contributes to a theoretical understanding of factors that explain users' intention to use the mobile SNSs.

Keywords Mobile social networking sites, Mobile user behavior, Mobile value, Social influence

Paper type Research paper

1. Introduction

Social networking sites (SNSs) are an online platform enabling people to communicate with one another; they are a new medium of expression allowing users to engage and maintain real relationship (Chen *et al.*, 2012; Ellison *et al.*, 2007; Kwon and Wen, 2010; Powell, 2009; Shen, 2013). An SNS allows users to create individual profiles and provides additional related functions (e.g. status updates, posting information, and sharing links), which enable users to contact and interact with friends. Not only can users maintain existing interpersonal relationships through SNSs, but they can also help expand the relationships. SNSs have currently become the most popular interpersonal networking tool.

With the rapid development of SNSs, the manner in which people use mobile phones has changed as well. A large number of SNSs (e.g. Facebook, Twitter, LinkeIn) develop social networking applications for mobile devices that enable users to use the SNS through mobile phones, irrespective of time and place (Powell, 2009). In other words, users are no longer tethered to their computers to check in and update their network. Nielsen (2010) indicated in his survey on mobile phone applications downloaded in the USA that as many as 54 percent of users downloaded applications in the social

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category (e.g. Facebook). The comScore (2010) survey indicated that up to 30.8 percent of smart phone users accessed SNS through their mobile browsers in the USA on January 2010; the number of Facebook users on mobile phones grew by 112 percent from 12 months earlier; comparatively, Twitter experienced an even more impressive year-on growth (347 percent). These figures, as shown by comScore, exhibit the marriage of SNSs and mobile phones because mobile phones are a means of communication. This coincides with the notion that social media bridge gaps among their own mediums. Gartner (2011) forecasted that, as the major trend of mobile applications in 2012, mobile SNSs would be the fastest growing category because, while the social networking platform induces increasingly more web flow, it gradually transforms into a portal site, thus spurring the development of mobile SNS services. Therefore, SNSs not only thrives in e-commerce environments, but also plays an important role in mobile commerce.

Prior research exploring people's usage of mobile value-added services included applications such as short message service (Turel *et al.*, 2007), mobile internet (Kim *et al.*, 2007; Kim and Hwang, 2012), mobile shopping (Lu and Su, 2009), mobile games (Liang and Yeh, 2011), and mobile payment systems (Kim *et al.*, 2010). A large number of studies (comScore, 2010; Gartner, 2011; Powell, 2009) thought the future development of mobile SNS to be promising, although they failed to elucidate the factors of user behavioral intention toward mobile SNSs. This study thus considers the factors affecting user intention to use of mobile SNSs.

In analyzing intention to use technology, Davis (1989) proposed the Technology Acceptance Model (TAM) based on the Theory of Reasoned Action (TRA) to explain user intention to use information technology. Subsequent research (Liang and Yeh, 2011; Lu and Su, 2009) was based on the same theory to explore user intention to use mobile value-added services. However, recent studies on mobile internet services have introduced the perspective of value into the research context, with perceived value becoming a chief issue; that is, they used the approach of value of products or services perceived by users, which was more pertinent in the user's mind (Kim and Han, 2011; Kleijnen *et al.*, 2007). Numerous scholars (Kim *et al.*, 2007; Kim and Han, 2011; Turel *et al.*, 2007) believed that perceived value is important to internet users, and is a reason for user acceptance and use of mobile technology.

Because consumer perceived value arises from a certain type of product or service (Zeithaml, 1988), by analyzing only the properties of the product or service (positive or negative) can the formation of value in the consumer be understood better (Kim *et al.*, 2007; Zeithaml, 1988). Mobile devices have unique properties: they can be accessed at any time, in any location, can remain on at all times, and is a personal device (Kim and Hwang, 2012). A mobile SNS is a user's activity on SNS accessed through a mobile device (e.g. mobile phone), and is capable of transferring the function of social services that have been limited to personal computers (PCs) to mobile phones, to provide members with the ability to interact and share in real time, irrespective of time and place (Powell, 2009). This study thus considers that mobile SNS services can be assigned unique attributes by mobile devices. For example, users can access SNS services easily through mobile phones at any time and place (convenience of mobility), and can use mobile phones to engage in the same SNS services as those provided by a PC (e.g. writing and sending messages, checking the latest news of friends, and updating one's own status) (service compatibility). Although these are the positive attributes of mobile SNS services, users still have concerns over risks when using mobile networks to transmit data (Kleijnen *et al.*, 2007). A number of researchers

(Powell, 2009; Tapscott, 2008) have also indicated that users are extremely aware of security risks when using SNSs. Meanwhile, other researchers (Kim *et al.*, 2007; Kleijnen *et al.*, 2007) believed that user conception of value would be negatively affected if it required users numerous efforts to learn how to use or succeed in using SNS services on mobile devices (cognitive effort). Such are the negative attributes of mobile SNS services. We believe that all these unique attributes of mobile SNS services echo the perceived characteristics of innovation (PCI) framework by Rogers (1995), such as relative advantages, compatibility, and complexity. Therefore, this study examines the attributes of the services that are linked to the perceived value of mobile SNS using the PCI perspective.

In addition, many empirical studies (Hsu and Lin, 2008; Hsu and Lu, 2004; Venkatesh and Brown, 2001; Venkatesh and Morris, 2000; Venkatesh *et al.*, 2003) believed that incorporating the factors of social influence is necessary in the exploration of influence on individual intention to use information technology. A number of theories have stated that the social influence factor plays a key role in individual behavioral intention; the TRA, for example, argues that individual intention is subject to influence the subjective social norm and attitude of the individual (Fishbein and Ajzen, 1975). Innovation Diffusion research argued that, other than the individual decision pattern and technological properties, social influences (e.g. critical mass) play an important role in affecting whether a person finalizes a decision to use an information technology (Rogers, 1995). Accordingly, this study used the perspective of social influences and value theory, and the framework of PCI as two parts, namely benefit and cost, of the value of mobile SNS, to propose a research model for investigating user intention toward mobile SNS.

2. Theoretical background

2.1 Mobile value: utilitarian and hedonic value

Perceived value is the tradeoff between benefits and costs (Kim *et al.*, 2007; Kleijnen *et al.*, 2007; Zeithaml, 1988), and has been measured by a substantial number of previous studies in only a single construct (Chen, 2008; Kim *et al.*, 2007). Some researchers (Kim and Han, 2011; Kim and Hwang, 2012), however, believed that in the mobile environment, the perceived value of users consists of the utilitarian value and hedonic value, referred to by Kim and Hwang (2012) as mobile value. The SNS is basically constructed as a social environment to allow people to connect, interact, help one another, and share online (Powell, 2009). In the social environment, services provided by web sites not only enable people to establish contact (usefulness), but also evoke pleasure (enjoyment) (Lin and Lu, 2011). Lin and Lu (2011) further illustrated that these are the main reasons people continue using SNSs. In summary, this study selected the constructs of utilitarian value and hedonic value to measure the perceived value of users for mobile SNSs.

Utilitarian value is defined as consumer's overall evaluation on the functional benefits and costs (Overby and Lee, 2006) related to achieving his/her specific purpose (Hoffman and Novak, 1996). Utilitarian value, which is based on functions, signifies that the user can accomplish certain task-related objects with the help of mobile internet services (Kim *et al.*, 2007). The SNS applications developed for mobile devices provide a number of functional services, such as the ability to upload mobile photos, write on walls, and send messages. A mobile SNS transfers the function of social services that have been available only on PCs to the mobile phones, to provide members with the opportunity to interact and share in real time, irrespective of time

and place. Therefore, we considered that accessing SNS through mobile phones enables users to achieve self-expression (e.g. writing text messages) and sustain interactions with others (e.g. replying to messages), such that the user's purpose is satisfied (Powell, 2009) in other words, the utilitarian value is fulfilled for the user.

Hedonic value is defined as the consumer's overall evaluation of experiential benefits and costs (Overby and Lee, 2006). It is based on emotions like the enjoyment, pleasure, and aspiration felt by the individual during his/her use of a product or service (Hirschman and Holbrook, 1982). Sledgianowski and Kulviwat (2009) indicated that SNS is a pleasure-oriented information system, and that the cause affecting a person's usage is related to the pleasure he or she feels when using it. Many researchers (Kim and Han, 2011; Kim and Hwang, 2012) stated that mobile services cater to the sense of pleasure and emotions in people as much as they provide users with useful functions. This study thus considers the pleasure, joy, fun, and excitement felt by the user during SNSs use in evoking positive emotional reactions, meaning fulfillment of hedonic value.

To identify the antecedents of mobile value creation, this study is based on Rogers' (1995) perspective of PCI. Rogers (1995) held that during their adoption of innovated services or products, people are usually subject to their cognition of innovative matters, which have properties such as relative advantage, compatibility, complexity, observability, and trialability; all these variables have a positive effect on the prevalence of the innovation, except for complexity, which has a negative influence. However, as suggested in information systems research, only relative advantage, compatibility, and complexity consistently display relationship to the adoption of innovation (Agarwal and Prasad, 1997). Hence, this study utilizes these three characteristics as predictors for mobile value. Furthermore, the use of mobile SNSs in Taiwan is still in its infant stage because it was uncommon (FIND, 2010); hence, mobile SNSs may currently still be an innovative service for the majority. Accordingly, we selected Rogers (1995) PCI perspective as the antecedent for value and categorized the PCI framework according to its characteristics, into benefits and costs to explain the cognition of value.

This study proposes the use of relative advantage and compatibility as components of perceived benefit. First, since mobile services are most characterized by its convenience, we use, in reference to the research of Kleijnen *et al.* (2007) in mobile commerce, mobile convenience to measure the relative advantage of mobile SNSs. Next, as compatibility is about mobile services and compliance with consumer demands for service (Hourahine and Howard, 2004; Kleijnen *et al.*, 2007), this study uses service compatibility to denote Rogers (1995) compatibility construct.

Regarding perceived cost, complexity, which is perceived as the relative degree of difficulty in understanding and using innovation, negatively influences the propagation of innovation (Rogers, 1995). Hence, when using mobile services, if the user feels the service is relatively complex, he should make effort to learn (Hourahine and Howard, 2004) and, when using the services, non-assured situations may occur, like security problems. This study thus uses security risk and cognitive effort to denote complexity, as proposed by Rogers (1995), for the cost factor from using mobile SNSs.

In summary, this study uses mobile convenience and service compatibility as the construct of perceived benefit for predicting mobile value, and security risk and cognitive effort as the construct of perceived cost.

2.2 Social influences: social norms and number of peers

Social influences, which constitute outside social factors on individual behavior, can be divided into social norms and critical mass (Hsu and Lu, 2004). Hsu and Lu (2004)

stated that individual social norms refer to important cognition with reference to thoughts about whether or not to commit a behavior. Many researchers (Hsu and Lu, 2004; Kim *et al.*, 2011; Lu and Lee, 2010) agree that when engaging in a certain behavior, the individual is subject to the influence of social norms from colleagues, friends, and classmates as a major reference. That is, the individual follows the thinking of important persons of reference to commit certain behaviors.

A large number of studies (Lou *et al.*, 2000; Sledgianowski and Kulviwat, 2009) have verified that critical mass has a positive influence on user intention to accept information technology. That is, the number of people using a product or service reaches what the user perceives as a critical mass, and the intention to use emerges in him/her. In the case of interactive information technology (e.g. Skype and instant messaging), when an individual perceives friends, colleagues, or others in his/her social circle using a product or service, it evokes the intention of the individual to use the same (Lin and Bhattacherjee, 2008). Sledgianowski and Kulviwat (2009) discovered that where critical mass was the key factor affecting use of SNSs, the SNS allowed people who knew one another to stay in touch, especially to share with friends at any time. Because the number of participating friends is the key factor affecting intention to use (Lin and Lu, 2011; Powell, 2009), this study used the number of peers to represent critical mass. Lin and Lu (2011) also stated that the number of peers is an important factor affecting SNSs use. Based on the above, this study used social norms and number of peers as the construct of social influence.

3. Research model and hypotheses

Figure 1 presents the research model of this study, developed from the perspective of social influences, value theory, and PCI. In the model, mobile value and social influence are the factors affecting individual intention to use mobile SNSs. Utilitarian value and hedonic value constitute the construct of mobile value, and a PCI framework comprises the benefit and cost of the mobile SNSs. This study contemplated the factors of social norms and number of peers for social influence. Figure 1 presents the hypothesis of each construct.

3.1 Hypothesis development

3.1.1 Perceived benefit: mobile convenience. Clarke (2001) indicated that businesses involving mobile commerce are capable of providing convenient services that can be used in real time and without time limitations. Because the primary advantage of mobile services is convenience, we used mobile convenience to measure the relative advantage of using mobile SNSs, based on the research of Kleijnen *et al.* (2007) on mobile commerce. The user may use a mobile phone to gather information and accomplish transactions at any time or place (Kim and Hwang, 2012), and consequently obtain mobile data services (MDS) value because of the convenience derived from the effective and timely transmission service (Kleijnen *et al.*, 2007). Thus, by using SNSs on a mobile phone, the user may text graffiti boards, easily send and upload images using a mobile phone, and achieve tasks and goals (Powell, 2009). Consequently, the mobile SNSs allow users to engage in enjoyable activities (Qualman, 2009; Wei and Lu, 2014). The mobile SNSs can satisfy user demands and offer entertainment quickly, and thereby further increase the perceived user value. Therefore, we propose the following hypotheses:

H1a. Mobile convenience positively influences utilitarian value.

H1b. Mobile convenience positively influences hedonic value.

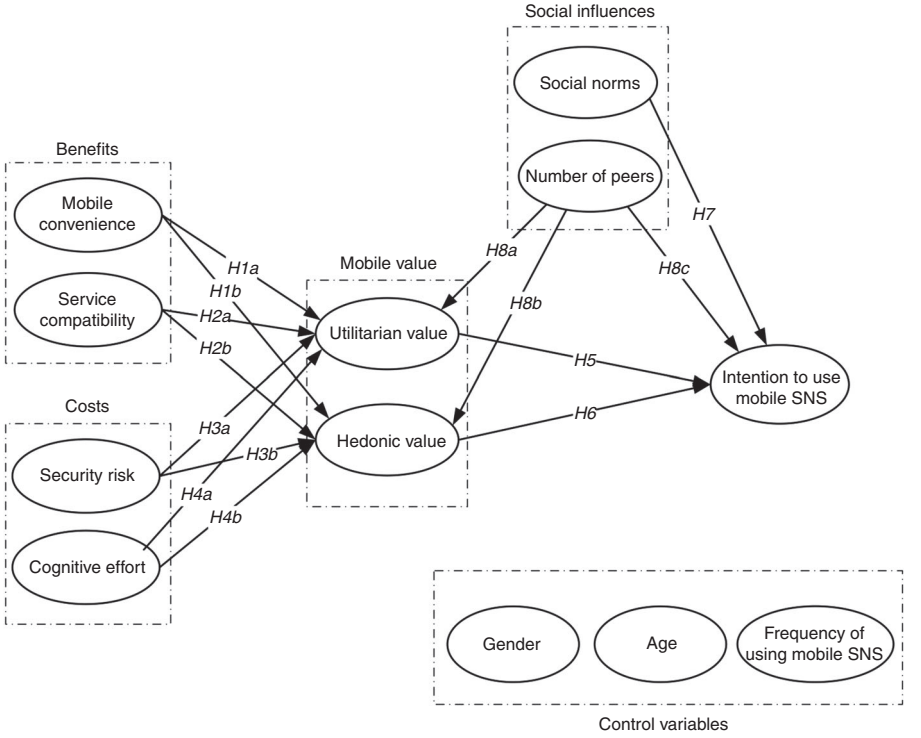


Figure 1.
The research model

3.1.2 Perceived benefit: service compatibility. Based on the characteristics of innovation framework developed by Rogers (1995), compatibility is defined as the consistency of innovation that uses a potential user's current sense of value, past experiences, and demands. Meuter *et al.* (2005) concluded that compatibility is the consistency of products and value perceived by the consumer. The concept of compatibility also applies to the research on embracing related mobile technologies (Kleijnen *et al.*, 2007). According to Kleijnen *et al.* (2007), consumers use MDS mainly to satisfy specific demands for services; service compatibility is the compatibility of MDS with a specific service demand.

Therefore, an SNS user is no longer limited to using a computer to sign in to SNSs and update digital content, and the user can use the functions provided on the SNSs at any time by using a mobile phone (Powell, 2009). Thus, by using a mobile phone, a user can use the same SNS services as those available on a PC, (e.g. being allowed to check the most recent statuses of friends and update their own status, upload photos, add new friends, write on walls, send messages, and play games on Facebook). Therefore, service compatibility, when increasing the user cognition of its utilitarian value (Powell, 2009), may boost hedonic value through the services offered; users can express themselves and interact with peers in the network (Qualman, 2009). Based on these facts, we propose the following hypotheses:

H2a. Service compatibility positively influences utilitarian value.

H2b. Service compatibility positively influences hedonic value.

3.1.3 Perceived cost: security risk. Similar to online shopping sites, SNSs also confront with perceived risk (Pavlou and Gefen, 2004); for example, security problems. A number of researchers (Powell, 2009; Tapscott, 2008) have indicated that, when using SNSs, users are particularly aware of this risk.

Numerous researchers also mentioned that users are concerned about using mobile internet because they worry that personal information may be hijacked when they use wireless services (Kleijnen *et al.*, 2007). Because the user feels that using SNSs with a mobile phone is more likely to cause security problems, such as the transparency of personal information, we believe that the user cannot adequately evaluate the functional services provided by mobile SNSs; thus, the security risk incurred by users negatively affects utilitarian value. Also, the disturbance brought about by users' concern about security issue and loss of personal privacy when they use mobile SNS services has negative cognition of hedonic value toward these services. Therefore, we proposed the following hypothesis:

H3a. Security risk negatively affects utilitarian value.

H3b. Security risk negatively affects hedonic value.

3.1.4 Perceived cost: cognitive effort. A second cost factor, cognitive effort, is independent of complexity, which is an innovation characteristic and is considered an intrinsic factor of technology or mobile devices (Kleijnen *et al.*, 2007). For example, users should know certain operating procedures before they can use such a device.

Garbarino and Edell (1997) stated that a task that requires much effort to assess causes negative effects to occur. Kleijnen *et al.* (2007) also stated that when the user thinks it takes efforts (e.g. time or mind) to use the information system, negative effect would cast on the cognition of utilitarian and hedonic values. We thus gather that in the use of mobile SNS services, the user's cognition of utilitarian value for using such services may be compromised if it takes long waiting for connection or access to multiple interfaces to use the services. Moreover, when users receive negative stimulation, their mood is affected accordingly, or they may stop using the services or products (Swinyard, 1993). Consequently, the user may feel unpleasant if the time and effort required to access mobile SNS services is too great.

Regarding mobile internet services, the greatest advantages are convenience, freedom from limitation, and accessibility (Lee, 2009). Conversely, if using these services requires effort, the user's self-confidence decreases (Kim *et al.*, 2007; Kleijnen *et al.*, 2007). Thus, mobile SNS learning that requires considerable user effort adversely affects the value of user enjoyment and cognition. Therefore, we propose the following hypotheses:

H4a. Cognitive effort negatively influences utilitarian value.

H4b. Cognitive effort negatively influences hedonic value.

3.1.5 Mobile value: the effect of utilitarian and hedonic value on the intention to use. Individual perceptions of utility or enjoyment in a cyber-environment affect user attitudes toward behavior (Hoffman and Novak, 1996). Numerous researchers studying the cyber environment have discovered that utilitarian value and hedonic value play a crucial role and are among the major factors affecting user intention behaviors

(Mathwick *et al.*, 2001). The research conducted by Park (2006) suggested that utilitarian and hedonic value affect user intention to use mobile internet services. According to this viewpoint, if the user believes that using SNSs on a mobile phone offers enjoyment and fulfillment, the intention to use mobile SNSs is evoked. Therefore, we propose the following hypotheses:

H5. Utilitarian value positively influences the intention to use mobile SNSs.

H6. Hedonic value positively influences the intention to use mobile SNSs.

3.1.6 Social influence: social norms. Norms influence individual changes in attitude or behavior to pursue recognition within a group (Hsu and Lu, 2004; Lu and Lee, 2010). Social norms generally form within groups, in which a person changes his or her cognition and behavior to comply with the expectations of others or a certain group norm (Ellison *et al.*, 2007). In other words, a person complies with the expectations of others or a group to gain recognition; people are primarily influenced by the social norms practiced by friends, classmates, and colleagues (Hsu and Lu, 2004). Recent empirical studies have indicated that social norms positively affect individual intention to use information systems (Hsu and Lu, 2004; Lee, 2009; Lu and Lee, 2010). Based on these findings, we assumed that crucial reference people, such as colleagues, friends, and classmates, affect user intention to use mobile SNSs. Therefore, we proposed the following hypothesis:

H7. Social norms positively influence the intention to use mobile SNSs.

3.1.7 Social influence: number of peers. The number of peers refers to the number of friends of a person who uses IT (Lin and Lu, 2011). Lin and Bhattacherjee (2008) discovered in their research that in the use of interactive IT by a user, when the number of peers reaches a majority perceived by the user, that would increase his/her perception of the usefulness and the enjoyment of such IT. In addition, many researchers (Chen *et al.*, 2012; Lin and Lu, 2011; Powell, 2009; Tapscott, 2008) have stated that the increasing number of peers in SNSs facilitates the connection between common friends (mechanism of friend recommendation), and the increased interactions and sharing between an increasing number of friends produces a heightened sense of enjoyment (Wei and Lu, 2014). The same is true of the mobile SNSs, which the user can access using a mobile phone irrespective of time and place, to express himself or herself instantly (e.g. upload a photo using the mobile phone and write messages) and maintain interactions with others (e.g. reply to a message). Thus, the user's pleasure in using SNSs increases through real-time interactions and information sharing with friends (Araujo and Neijens, 2012; Powell, 2009; Tapscott, 2008); thus, the utilitarian value and hedonic value of mobile SNSs for users are affected by the users' perception of the number of peers. Therefore, we proposed the following hypotheses:

H8a. The number of peers positively influences utilitarian value.

H8b. The number of peers positively influences hedonic value.

Because SNSs are essentially used to maintain contact with friends and, particularly, to share information with nearby friends at any time, the number of friends who join the

SNSs is a major factor that affects a person's intention to join (Araujo and Neijens, 2012, Powell, 2009; Tapscott, 2008). Lin and Lu (2011) stated that the number of peers is a crucial actor that affects the use of SNSs, signifying that the number of friends affects the intention to use IT. Therefore, when users are aware of an increasing number of peers interacting and sharing information with friends through mobile phones at any time and place, their intention to use mobile SNSs is evoked. For example, Facebook provides users with the ability to log in using their mobile phones, which enables them to share their whereabouts instantly with friends and triggers multiparty discussions and message sharing among friends. This subsequently enhances the intention of the user to use mobile SNSs. Therefore, we propose the following hypothesis:

H8c. The number of peers positively influences the intention to use mobile SNSs.

3.1.8 Control variables. To evaluate the proposed research model, the following additional control variables were added: gender, age, and frequency of using mobile SNSs. Frequency of use significantly affects either technology acceptance or usage intention, whereas people of different genders and ages may have dissimilar perceptions on the intention to use mobile SNSs and perceived mobile value. Therefore, these variables were expected to influence user intention to use mobile SNSs and perceived mobile value across the model.

4. Methods

4.1 Measurement instrument

To ensure content validity, the items selected for the constructs were largely adapted from prior research. The items were slightly modified to suit the context of mobile SNSs. Items addressing mobile convenience, service compatibility, and cognitive effort were adapted from Kleijnen *et al.* (2007), and items for measuring security risk were adapted from Lee (2009). Additionally, items measuring mobile value, including utilitarian value and hedonic value, were modified from those used by Kwon and Wen (2010) and Kim *et al.* (2007). The items used to measure social influences, including social norms and the number of peers, were adapted from Hsu and Lu (2004) and Lin and Lu (2011). Finally, items measuring the intention to use mobile SNS were developed based on the Davis (1989) study.

All of the items were measured using the five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The pretest involved five respondents, each with more than two years of experience using SNSs. The respondents were asked to comment on the length of the instrument, the format, and the wording of the scales. A pilot test was conducted on 116 SNS users to validate the instrument. Slight changes in wording were made to both of the tests. The Appendix lists the final items used in the questionnaire.

4.2 Sample and data collection

The target participants were users who were using or had used mobile SNS services in Taiwan. Data were collected mainly through an online questionnaire survey. Invitation messages were posted on ten popular social network-related forum web sites, such as Facebook (http://zh-tw.facebook.com/), WRETCH (www.wretch.cc/), iPartment (http://yahoo.i-part.com.tw/), and Plurk (www.plurk.com/t/Taiwan) over a six-week period. To increase the response rate, we offered respondents who completed the questionnaire in full the opportunity to take part in a lucky draw for one of

30 NT$100 bookstore vouchers. To avoid duplicate responses, respondent identity was confirmed by using the e-mail and IP address obtained when the questionnaires were received.

We collected 436 returned online questionnaires. After excluding the respondents who were not using a mobile SNS (83) and questionnaires with invalid or repeated answers (35), the total number of valid questionnaires was 318, indicating a valid return rate of 73 percent. In total, 52 percent of the respondents were women, and 47 percent were men. Most of the respondents (64 percent) were 19-35 years old. Table I shows the detailed sample demographics.

This study followed the recommendation of Armstrong and Overton (1977) for testing non-response bias on the samples to divide all valid questionnaires according to retrieval time in Group 1 (those within 14 days) and Group 2 (those after 15 days), and used independent sample *t*-tests on the two groups to assess whether they had significant differences in the constructs, with the results shown in Table II. The results indicated that the two samples demonstrated a significant difference ($p > 0.05$); therefore, this study was free from sample response bias.

5. Data analysis and results

The research model was analyzed using structural equation modeling (SEM), supported by Analysis of Moment Structures (AMOS) 7.0. Bollen (1989) indicated that SEM is a powerful second-generation multivariate technique used for analyzing causal models with an estimation of two components of a causal model: measurement and structural models. The measurement model is estimated using confirmatory factor analysis (CFA) to test whether the constructs possess sufficient reliability and validity.

Measure	Frequency	%
Gender		
Female	166	52.2
Male	152	47.8
Age		
Under 18	51	16.1
19-25	98	30.8
26-35	106	33.3
36-45	41	12.9
Over 45	22	6.9
Education		
High school or less	69	21.7
College/university	166	52.2
Graduate degree	83	26.1
Occupation		
Student	132	41.5
Office worker	168	52.8
Self-employment	13	4.1
Home marker	5	1.6
Frequency of using mobile SNSs		
Several times a day	132	41.5
About once a day	153	48.1
3-5 times a week	26	8.2
1-2 times a week	7	2.2

Table I. Sample demographics

Construct	Group	Mean	*t*-value	*p*-value
Mobile convenience	1	16.04	−1.39	0.16
	2	16.24		
Service compatibility	1	11.74	−1.24	0.22
	2	11.92		
Security risk	1	5.92	−0.95	0.34
	2	6.11		
Cognitive effort	1	11.41	1.93	0.06
	2	11.05		
Utilitarian value	1	15.86	0.54	0.59
	2	15.77		
Hedonic value	1	15.81	0.59	0.55
	2	15.72		
Social norms	1	11.87	−1.21	0.23
	2	12.03		
Number of peers	1	11.80	1.43	0.15
	2	11.62		
Intention to use	1	11.57	−0.40	0.69
	2	11.63		

Notes: Group 1 samples = 143; Group 2 samples = 175

Table II. Analysis of non-response bias

The structural model is used to examine the significance and direction of the relationship between the constructs.

5.1 Problems with using estimates and multicollinearity

Hair *et al.* (1998) stated that verifying whether the estimated coefficients of the model cause offending estimates to occur is necessary before testing the overall model fitness. These violations, as Hair *et al.* (1998) proposed, include the presence of negative error variances and standardized regression weights exceeding 0.95. In this study, with the absolute value of the standardized coefficients ranging between 0.55 and −0.20, none exceeding 0.95, and without any negative error variances in the model, the results indicated the non-existence of offending estimates. Thus, the test of overall model fitness could be performed.

To ensure that multicollinearity was not present in the construct measurements, the variance inflation factor (VIF) statistic was computed. Hair *et al.* (1998) suggested that the VIF value of a variable should not exceed 10; otherwise, the variable is considered highly collinear. The VIF values in this study ranged from 1.051 to 1.797, which are lower than the required threshold value. Therefore, multicollinearity is unlikely to have been a concern in this study.

5.2 Tests of the measurement model

The CFA used AMOS 7.0 for testing the measurement model. Goodness of fit was tested using six common model-fit measures: χ^2/df, the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), and the root mean square error of approximation (RMSEA). The results of the model-fit were χ^2/df = 2.21, GFI = 0.85, AGFI = 0.82, NFI = 0.84, CFI = 0.91, and RMSEA = 0.062. All of the model-fit indices exceeded the recommended values (see Table III), thus exhibiting an adequate fit to the collected data.

The tests performed on the questionnaire concerning reliability and validity included internal consistency, convergent validity, and discriminant validity tests. The

Table III.
Fit indices for the measurement and structural models

Fit indices	Recommended value	Suggested by authors	Measurement model	Structural model
χ^2 (df)	–	–	1,344.2 (608)	1,352.7 (615)
χ^2/(df)	⩽3	Hayduck (1987)	2.21	2.12
Goodness of fit index (GFI)	⩾0.8	Scott (1994)	0.85	0.85
Adjusted for degrees of freedom (AGFI)	⩾0.8	Scott (1994)	0.82	0.81
Normed fit index (NFI)	⩾0.8	Hair *et al.* (1998)	0.84	0.82
Comparative fit index (CFI)	⩾0.9	Bagozzi and Yi (1988)	0.91	0.90
Root mean square error of approximation (RMSEA)	⩽0.08	Bagozzi and Yi (1988)	0.062	0.59

reliability and convergent validity of the factors were estimated using Cronbach's α, composite reliability (CR), and average variance extracted (AVE) (see Tables IV and V). The Cronbach's α of each construct ranged from 0.77 to 0.90, which exceeded the acceptable value of 0.50 (Nunnally, 1978). Hair *et al.* (1998) suggested that the values of

Table IV.
Statistics of construct items

Construct	Items	Factor loadings	Mean	SD	Cronbach's α	Composite reliability (CR)
Mobile convenience (MC)	MC1	0.74	4.03	1.27	0.84	0.85
	MC2	0.77				
	MC3	0.74				
	MC4	0.79				
Service compatibility (SC)	SC1	0.82	3.95	1.23	0.80	0.80
	SC2	0.76				
	SC3	0.67				
Security risk (SR)	SR1	0.82	2.01	1.62	0.83	0.83
	SR2	0.80				
	SR3	0.75				
Cognitive effort (CE)	CE1	0.85	3.73	1.69	0.90	0.89
	CE2	0.91				
	CE3	0.80				
Utilitarian value (UV)	UV1	0.77	3.95	1.45	0.85	0.85
	UV2	0.78				
	UV3	0.77				
	UV4	0.76				
Hedonic value (HV)	HV1	0.79	4.04	1.36	0.83	0.83
	HV2	0.80				
	HV3	0.73				
	HV4	0.65				
Social norms (SN)	SN1	0.70	3.90	1.22	0.77	0.78
	SN2	0.84				
	SN3	0.65				
Number of peers (NP)	NP1	0.75	3.99	1.16	0.80	0.80
	NP2	0.81				
	NP3	0.70				
Intention to use (ITU)	ITU1	0.70	3.87	1.22	0.78	0.79
	ITU2	0.82				
	ITU3	0.71				

Construct	AVE	MC	SC	SR	CE	UV	HV	SN	NP	ITU
MC	0.58	*0.76*								
SC	0.57	0.36	*0.75*							
SR	0.63	−0.16	−0.38	*0.79*						
CE	0.73	0.21	0.23	−0.18	*0.85*					
UV	0.59	0.50	0.41	−0.29	0.30	*0.77*				
HV	0.56	0.32	0.46	−0.16	0.26	0.50	*0.75*			
SN	0.54	0.14	0.12	0.04	0.09	0.16	0.19	*0.73*		
NP	0.57	0.29	0.18	−0.17	0.13	0.34	0.39	0.11	*0.75*	
ITU	0.56	0.26	0.29	−0.15	0.29	0.47	0.63	0.20	0.40	*0.75*

Notes: Diagonal elements (italic) are the square root of average variance extracted (AVE) between the constructs and their measures. Off-diagonal elements are correlations between constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements

Table V. Correlations and AVE

CR should be above 0.7 and the AVE of construct should exceed 0.5. As shown in Table IV, all of the CRs were above 0.80. In addition, the AVEs were all considerably above the threshold value level of 0.50 (see Table V). This result indicates that the study scale has reliability and convergent validity. Table V shows that the same scale had discriminant validity that was consistent with the suggestion provided by Fornell and Larcker (1981): the square root of the AVE of a construct should be greater than that of the other correlation coefficients of the construct, which demonstrates good discriminant validity between the constructs.

Podsakoff *et al.* (2003) agreed that common method bias is a potential problem in behavioral research when the assessment of both dependent and independent variables is reliant on perceptual responses from a single source. We adopted two primary approaches proposed by Podsakoff *et al.* (2003) to control the common method bias (CMB) in this study, which are as follows: the design of the study procedures; and statistical controls. By using these methods, this study avoided the CMB. The design and arrangement of questionnaires according to Podsakoff *et al.* (2003) were applied: protecting respondent anonymity and reducing evaluation apprehension. Respondents answered anonymously, and were assured that there were no correct or incorrect answers; counterbalancing question order: shuffling items of different constructs and designing reversed items; and improving scale items: for reasons of simplicity, specificity, and conciseness in questions, no ambiguous or uncommon terms were used.

When dealing with survey data, CMB can affect statistical results. Podsakoff *et al.* (2003) suggested different approaches to check for CMB. We assessed the severity of method variance by conducting a CFA on competing models that increase in complexity (Podsakoff *et al.*, 2003; Korsgaard and Roberson, 1995). If method variance is a significant problem, a simple model (e.g. a single-factor model) should fit the data as a more complex model (in this case, a nine-factor model) does. The hypothesized model with nine factors yielded a better fit of the data than the simple model. Our findings indicated that the simple factor model fit the data: χ^2 (405) = 2,956.583; CFI = 0.45; NFI = 0.41; GFI = 0.60; RMSEA = 0.141, whereas the nine factors model fit the data as well: χ^2 (361) = 830.34; CFI = 0.91; NFI = 0.84; GFI = 0.87; RMSEA = 0.058. Thus, the nine factors model yielded a better fit of the data than the simple factor models. In summary, CMB was not a significant issue in this study.

5.3 Tests performed on the structural model

The structural model was tested using AMOS 7.0. The model-fit indices for the structural model indicated a good model fit (χ^2/df = 2.32, GFI = 0.83, AGFI = 0.80, NFI = 0.82, CFI = 0.90, RMSEA = 0.063). Figure 2 shows the standardized path coefficients, path significances, and explained variance (R^2) for each path. Most of the hypotheses (*H1a*, *H1b*, *H2a*, *H2b*, *H3*, *H4a*, *H4b*, *H5*, *H6*, *H8a*, *H8b*, and *H8c*) were significant in the SEM prediction, except for social norms (*H7*). In addition, the control variables of gender, age, and the frequency of using mobile SNSs did not produce significant effects across the constructs of the research model.

The explained variance (R^2) indicates that the intention to use mobile SNSs is influenced by utilitarian value, hedonic value, and the number of peers, with an explanatory power of 56 percent; the utilitarian value is influenced by mobile convenience, service compatibility, security risk, cognitive effort, and the number of peers, with an explanatory power of 53 percent; and the hedonic value is influenced by mobile convenience, service compatibility, cognitive effort, and the number of peers, with an explanatory power of 52 percent.

This study also discarded the control variables and calculated the empirical results anew. It was found in this study, as Table VI shows, the standardized path coefficients, path significances, and explained variance (R^2) for each path. It was found in this study that except the standardized path coefficients and path significances for *H8c* having changed from 0.16* to 0.21**, the rest of the hypotheses ended up without much difference when compared with the condition after the control variables incorporated (please see Table VII). Meantime, we discovered that the R^2 for intention to use mobile SNSs, utilitarian value and hedonic value decreased without the control variables. Owing to that, this study will retain these variables.

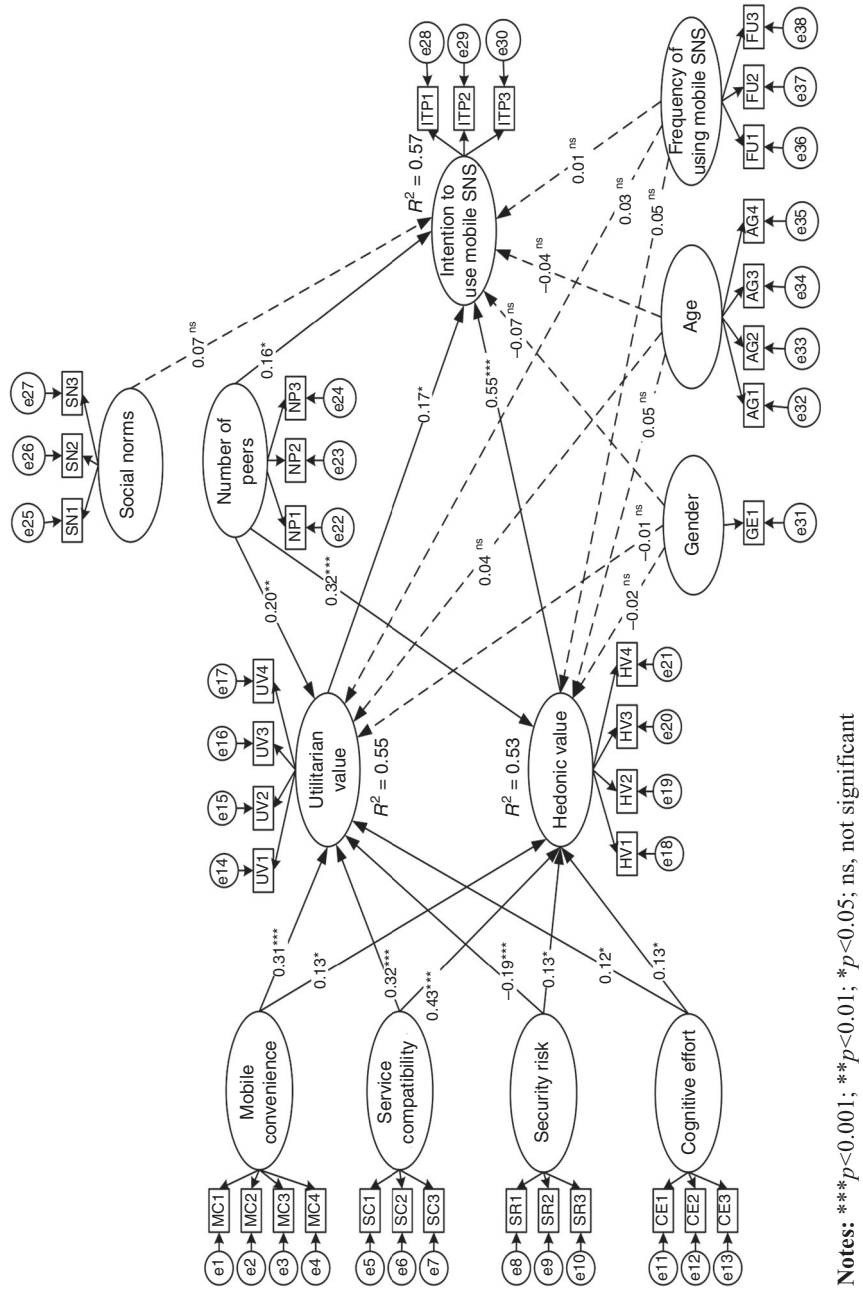
6. Summary and discussion

6.1 Correlations between users and perceived benefits, perceived costs, mobile value, and intention to use

This study targeted mobile SNS users and identified, from the perspective of mobile value (utilitarian value and hedonic value) and social influences (social norms and number of peers), the reasons for user use of mobile SNS. The findings are discussed below.

Figure 2 shows the research results regarding users. The results revealed that the main factors enticing people to use mobile SNSs are hedonic value, utilitarian value, and the number of peers. Of the three factors, hedonic value most significantly influenced the usage of mobile SNSs. According to the results of this study, which are consistent with those of numerous studies (Lin and Bhattacherjee, 2008; Lin and Lu, 2011; Sledgianowski and Kulviwat, 2009), in the context of a pleasure-oriented information system, pleasure played a critical role. The results also indicated that using mobile SNSs on a mobile phone was a pleasurable experience for users and they were consequently enticed to use mobile SNSs extensively.

Regarding the effect of the number of peers on a user's use of mobile SNSs, social environments are constructed to allow people to connect, interact, help, and share information with each other on the internet (Powell, 2009). These web sites provide services to allow people to contact one another (utilitarian) and provide enjoyment (hedonism) (Lin and Lu, 2011). In addition, according to Pempek *et al.* (2009), most users who use social SNS platforms that assist people in contacting friends interact frequently with their close friends in the physical world. Powell (2009) stated that using mobile phones to access SNSs helps the user fulfill his or her tasks and needs



Notes: ***$p<0.001$; **$p<0.01$; *$p<0.05$; ns, not significant

Figure 2.
Path analysis result based on all valid samples

Hypothesis	Relationship	Standardized coefficient (β)	Results
H1a	MC→UV	0.30***	Supported
H1b	MC→UV	0.14*	Supported
H2a	SC→UV	0.30***	Supported
H2b	SC→HV	0.40***	Supported
H3	SR→UV	–0.20***	Supported
H4a	CE→UV	0.14*	Supported
H4b	CE→HV	0.13*	Supported
H5	UV→ITU	0.15*	Supported
H6	HV→ITU	0.54***	Supported
H7	SN→ITU	0.08^{ns}	Not significant
H8a	NP→UV	0.21**	Supported
H8b	NP→HV	0.35***	Supported
H8c	NP→ITU	0.21**	Supported
Constructs	R^2		
Utilitarian value (UV)	0.52		
Hedonic value (HV)	0.51		
Intention to use (ITU)	0.55		

Notes: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; ns, not significant

Table VI. Hypothesis testing in the structural model (without control variables)

(e.g. writing and reading messages in real time, allowing users to check in from their present location on SNS , and uploading photos taken with mobile phones). Therefore, we infer that a large number of peers using the mobile SNS allows users to connect with more friends and enables them to continue interacting and sharing with one another regardless of their location, which subsequently increases the user's perception of utilitarian value. Interacting and sharing information with friends synchronously also helps evoke the hedonic value in a user's mind. Thus, when the user perceives that a sufficient number of friends are using the SNS and expects that they will continue to use the SNS through mobile phones, the intention to use mobile SNSs is enhanced. Furthermore, as the number of friends who use mobile SNSs increases, the utility and pleasure experienced by the user also increase, which subsequently elevates the intention to use mobile SNSs. Therefore, we contend that the intention to use mobile SNSs and the utilitarian and hedonic values for mobile SNS users are subject to their perception of the number of peers involved.

Several studies (Hsu and Lu, 2004; Lu and Lee, 2010) indicated that people intend to use IT to acquire group recognition (from friends, classmates, and colleagues). However, contrary to previous research (Hsu and Lu, 2004; Kim *et al.*, 2011; Lu and Lee, 2010), social norms did not directly affect the intention to use. We believe that social norms are not a factor that causes people to use mobile SNSs because SNSs provide both task-oriented and a pleasure-oriented information system (Lin and Lu, 2011; Powell, 2009; Sledgianowski and Kulviwat, 2009). In addition, interacting and sharing information with others is simple when using mobile SNS services, and this creates a comfortable environment for engaging in leisure and task-related activities. From the perspective of value theory, a customer's perceived value of the products or services is the main factor that affects his or her intention to use them. The results of this study verify this perspective; therefore, we infer that a person decides whether to use mobile SNSs mainly by considering value (utilitarian value and hedonic value). Accordingly, this may cause social norms to have little effect on the intention to use mobile SNSs.

Hypothesis	Relationship	Standardized coefficient (β)	Results
H1a	MC→UV	0.31***	Supported
H1b	MC→UV	0.13*	Supported
H2a	SC→UV	0.32***	Supported
H2b	SC→HV	0.43***	Supported
H3	SR→UV	−0.19***	Supported
H4a	CE→UV	0.13*	Supported
H4b	CE→HV	0.12*	Supported
H5	UV→ITU	0.17*	Supported
H6	HV→ITU	0.55***	Supported
H7	SN→ITU	0.07^{ns}	Not significant
H8a	NP→UV	0.20**	Supported
H8b	NP→HV	0.32***	Supported
H8c	NP→ITU	0.16*	Supported
Control variables			
Gender	Gender→UV	-0.01^{ns}	Not significant
	Gender→UV	-0.02^{ns}	Not significant
	Gender→ITU	-0.07^{ns}	Not significant
Age			
	Age→UV	0.04^{ns}	Not significant
	Age→HV	0.05^{ns}	Not significant
	Age→ITU	-0.04^{ns}	Not significant
Frequency of using mobile SNS (FU)			
	FU→UV	0.03^{ns}	Not significant
	FU→HV	0.05^{ns}	Not significant
	FU→ITU	0.01^{ns}	Not significant
Constructs	R^2		
Utilitarian value (UV)	0.55		
Hedonic value (HV)	0.53		
Intention to use (ITU)	0.57		

Notes: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; ns, not significant

Table VII.
Hypothesis testing in the structural model

Finally, utilitarian value positively influences the intention to use mobile SNSs. Powell (2009) indicated that a user who uses mobile SNSs is not bound to the computer. The ability to use mobile SNSs at any time by using a mobile phone helps reinforce efficient information sharing and connecting with others, and the user is able to obtain information and communicate in real time, which increase the intention of the user to use these services.

The beneficial aspects of mobile convenience and service compatibility directly and positively influence mobile value. Studies have indicated that the convenience of mobile SNSs allows users to use SNSs anytime and anywhere, which instantly satisfies user tasks and demands (Powell, 2009), provides entertainment for the user, enhances user satisfaction, and further increases the value for users. The possibility of using the same SNSs service available on PCs on mobile phones enhances user perception of utilitarian value, and the opportunities for self-presentation and exchanges with peers in the network provided by these services increase the pleasure value for users.

Regarding the mobile value cost, we assumed that both security risk and cognitive effort negatively influence mobile value. The results for security risk are consistent with the views of researchers (Powell, 2009; Tapscott, 2008); users consider security risk to be particularly serious when using SNSs; for example, users are concerned about

the violation of their personal data. The results also suggested that, when using mobile SNSs, user perception of utilitarian value decreases if the user feels that personal data are at a security risk. The results also indicated that cognitive effort positively influences both utilitarian value and hedonic value, which is contrary to the proposed hypothesis. Garbarino and Edell (1997) stated that a task that requires substantial effort to enable a person to use a service negatively influences the user. Therefore, if users believe that little effort is required in learning to use mobile SNSs on mobile phones (e.g. using mobile applications, posting items (photos, videos, and notes), and sending messages), and if these services can meet user needs for specific functions or effects, then their purpose of usage is satisfied. Furthermore, the user perception that operating a mobile SNS is simple when users use SNSs through mobile devices further increases the level of enjoyment for users.

6.2 Correlations between the control variables (gender, age, and frequency of using mobile SNSs) and mobile value and the intention to use

In previous studies, individual differences (such as gender and age) were determined to affect the online behaviors of users. Regarding gender, Venkatesh and Morris (2000) stated that differences in gender affect the relationships between the use of IT and other predicting variables; for example, males tend to use IT more than females do because of the need of tasks. In addition, Thayer and Ray (2006) determined that age affects the tendency of online users to use SNSs; younger users prefer to use the internet to communicate and make friends. Hills and Argyle (2003) also determined that older users do not use the internet as frequently as younger users do. In addition, researchers also discovered that experience in using computers and the internet (e.g. frequency of use) affects the relationships between user behaviors and other predicting variables (Thayer and Ray, 2006).

Table III lists the research results for the control variables (gender, age, and the frequency of using mobile SNSs). The results indicate that the control variables used in this study did not produce significant effects across the constructs (utilitarian value, hedonic value, and intention to use) of the research model. The findings, however, contradict those proposed by numerous researchers (Hills and Argyle, 2003; Thayer and Ray, 2006; Venkatesh and Morris, 2000). The reasons for this might be that mobile phones offer a channel through which friends can communicate, and that numerous SNS companies (e.g. Facebook, Twitter, LinkedIn) develop applications for mobile devices that allow users to use the SNS at any time on their mobile phones (Powell, 2009). The combination of SNSs and the mobile phone causes people to exhibit maximized synergy in developing and maintaining relationships with others. Therefore, we deduced that the differences in gender, age, or the frequency of use did not significantly affect utilitarian value, hedonic value, or the intention to use mobile SNSs.

7. Implications

7.1 Implications for academic researchers

The results of this study have several crucial academic implications. First, the constructs of mobile value (utilitarian value and hedonic value) predict user intention to use mobile SNSs, particularly hedonic value, which strongly affects the use of mobile SNSs. In previous studies examining utilitarian value only mobile services and their effect on user intention to use was investigated, and the influence of other values was not considered (Kleijnen *et al.*, 2007). Therefore, this study incorporated the construct of hedonic value to predict user intention to use mobile SNSs thoroughly. Second, of the

two components comprising the PCI framework used in this study, the benefits included mobile convenience and service compatibility, and the costs included security risk and cognitive effort. These factors affect the perception of mobile SNS value. Third, we incorporated social influences into the value model to propose an integrated theoretical framework to enhance the understanding of user intention to use mobile SNSs. The results indicated that social norms do not affect the intention to use mobile SNSs because the number of peers is the major factor enticing people to use mobile SNS. Finally, regarding the perceived value model proposed by Kim *et al.* (2007), the construct of benefits and costs yielded a 36.5 percent explained variance ($R^2 = 0.365$) for the perceived value, which yielded a 35.9 percent explained variance ($R^2 = 0.359$) for behavioral intention. However, in this study, which incorporated the factors of social influence, the coefficients of determination (R^2 for utilitarian value = 0.53; R^2 for hedonic value = 0.52) of the perceived value increased, whereas the R^2 for behavioral intention = 0.56. This corresponds with Lamb and Kling's (2003) argument that accounting for social aspects when exploring people's behaviors is necessary when using ICT. Thus, the model used in this study provides references for subsequent researchers.

7.2 Implications for social network service practitioners

Practitioners can draw several implications from this study. First, because hedonic value is the most critical factor affecting the intention to use mobile SNSs, creating a favorable environment for leisure and interaction on pleasure-oriented SNSs may be more effective than emphasizing utilitarian benefits. SNS service providers should continue developing applications of novel, pleasurable experiences to offer more pleasing user effects to further enhance user intention to use mobile SNSs. We also discovered that the number of peers significantly affects the utilitarian value, hedonic value, and intention to use mobile SNSs, indicating that an increased number of peers using mobile SNSs through mobile phones enhances the sense of usefulness in users and evokes a sense of pleasure, which subsequently increases people's intention to use. Therefore, SNSs services should be used to encourage members to use mobile SNSs to influence more of their friends to do the same.

Second, between mobile convenience and service compatibility, which both increase mobile SNS value effectively, service compatibility has a greater influence than mobile convenience on hedonic value. This sends a valuable message to SNSs service providers that specialize in pleasure-oriented mobile SNSs. Users focus more on whether the service that they use on a PC can be used on a mobile phone. Therefore, creating a favorable environment for service compatibility can be more effective than simply emphasizing mobile convenience.

Third, because security risk is a crucial factor that affects user perception of utilitarian value and is a focus for concern regarding the use of mobile SNSs, service providers should consider emphasizing the rigorous custody of information under security protocol to ensure users that using mobile SNSs is safe.

8. Limitations and future research

Despite the valuable findings and implications, this study has a number of limitations. First, the implications were drawn from a single study with samples in Taiwan. Therefore, generalizing the findings to other mobile SNS situations should proceed with caution. Further research conducted in cross-cultural and cross-marketplace contexts could investigate and compare the differences in antecedents to intention to use. Second, we used quantitative investigation methods; therefore, the respondents

could only respond to items prescribed in this study, which might have ignored several immediate user demands. Therefore, we recommend that future studies incorporate qualitative approaches, including interviews, to render more diverse results. Third, this study was cross-sectional, and samples were collected over a specific period of time. Therefore, the data were applicable only to that point in time. Performing a longitudinal analysis may remedy this problem by tracking follow-up developments and conditions thoroughly. Finally, this study did not explore other interference variables, such as the internal and external controls of personality. These interference variables can be incorporated into future studies.

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Appendix 1. The questionnaire

Mobile convenience (MC)
(MC1) Using mobile SNSs is an efficient way to manage my time.
(MC2) Using mobile SNSs would be convenient for me.
(MC3) Using mobile SNSs would allow me to save time.
(MC4) Using mobile SNSs would allow me to use SNS services instantly.

Service compatibility (SC)
(SC1) Using mobile SNSs fulfills my service needs.
(SC2) Mobile SNSs are compatible with the SNS service I typically use on a personal computer (PC).
(SC3) Mobile SNSs fit my service preferences.

Security risk (SR)
(SR1) I would not feel completely safe providing personal or private information over a mobile SNS.
(SR2) I am worried about using mobile SNSs because other people may access my account.
(SR3) I would not feel secure sending sensitive information over a mobile SNS.

Cognitive effort (CE)
(CE1) I do not think that using mobile SNSs is complicated.
(CE2) Understanding how to use mobile SNSs requires much effort.
(CE3) I believe that learning about how mobile SNSs work will be difficult.

Utilitarian value (UV)
(UV1) Using mobile SNSs enables me to acquire a large amount of information or contact numerous people instantly.
(UV2) Using mobile SNSs improves my efficiency in sharing information and connecting with others.
(UV3) Mobile SNSs are a useful service for communication.
(UV4) Mobile SNSs are a useful service for interacting with other users.

Hedonic value (HV)
(HV1) I have fun interacting with mobile SNSs.
(HV2) Using mobile SNS gives me a lot of enjoyment.
(HV3) I enjoy using mobile SNSs.
(HV4) Using mobile SNSs is boring (reversed).

Social norms (SN)
(SN1) My colleagues think I should use mobile SNSs.
(SN2) My classmates think I should use mobile SNSs.
(SN3) My friends think I should use mobile SNSs.

Number of peers (NP)
(NP1) Many of my friends use mobile SNSs.
(NP2) Most of my friends use mobile SNSs.
(NP3) I anticipate that many of my friends will use mobile SNSs in the future.

Intention to use (ITU)
(ITU1) I plan to use mobile SNSs in the future.
(ITU2) I intend to use mobile SNSs in the future.
(ITU3) I predict I will use mobile SNSs in the future.

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