

Factors Influencing Students' Embedment with, and Embracement of Social Networking Sites: An Analysis

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Abstract

This study investigated the undergraduates' embedment with, and embracement of social networking sites (SNS) with a modified theory of planned behavior (TPB). It is recognized that social influence, perceived behavioral control, enjoyment, as well as embracement and embedment, are pertinent to the discourse. Data was collected from undergraduates in four (4) culturally diverse countries. Hypotheses were developed to test the proposed research conceptualization. The partial least squares (PLS) technique was used for data analysis. The results confirmed that perceived enjoyment and perceived behavioral control positively influenced students' behavioral intentions for the use of SNS while subjective norm did not. However, subjective norm has positive impacts on students' embedment with, and embracement of such tools. Students' behavioral intention to accept SNS has a positive influence on students' embedment with, and embracement of SNS.

Keywords: Social Networking Sites, Theory of Planned Behavior, Embedment, Embracement.

1. Introduction

Social networking sites (SNS) offer users a new way of communicating, interacting, cooperating, and collaborating with others [12]. Popular SNS include Facebook and Twitter. EMarketer [13] reported that "nearly one in four people worldwide will use social networks in 2013. The number of social network users around the world will rise from 1.47 billion in 2012 to 1.73 billion this year, an 18% increase. By 2017, the global social network audience will total 2.55 billion." With regard to information on SNS in this study's settings (Malaysia, China, Nigeria, and Canada), the following insights are provided:

First, "there are 12,747,100 Facebook users in Malaysia, which makes it No.18 in the ranking of all Facebook statistics by Country. This also means that 48.73% of the Malaysian population is on Facebook" [26]. Second, Zhang and Pentina [37] commented that "approximately 54.7 percent of Internet users in China own or visit blogs and 47.3 percent have an account on one or more SNS. More than 25 percent write 10 or more posts on forums, blogs, or SNS every day, and 92.3 percent of Internet users visit social media pages at least three times a week." TechinAsia [30] noted that the largest sections of China's social media users, i.e. 30%, are aged 26 to 30, which is a perfect target for advertisers. As a whole, 91% of Chinese [net citizens] have social accounts, which is way above the 67% in the US. Third, the embracement of social media in Nigeria, particularly among the youth and the middle aged, is progressively increasing. In 2012, there were 48 million Internet users of which 6.6 million use Facebook and Twitter regularly [31, 32]. As per Facebook use, Nigeria is ranked 32nd in the world. Fourth, 40% of Canadians "had embraced either Facebook or Twitter by 2010. By 2012, almost half of the population had joined social media sites" [36]. Similarly, Maclean [25] indicated that "more than 19 million Canadians are now logging onto Facebook at least once every month—that's more than half the population—while 14 million check their newsfeed every single day." Maclean's report also noted that daily usage of Facebook in Canada is higher than both the global and U.S. averages.

Despite the increasing popularity of SNS among young people, little is known about psychosocial factors influencing their embedment with, and embracement of SNS. This study

seeks to make a contribution to the extant literature in that regard. Particularly, this research will attempt to provide an answer to the following question: what influence do factors related with subjective norm, perceived enjoyment, and perceived behavioral control have on students' embedment with, and embracement of SNS?

2. Background Information and Theoretical Framework

As indicated above, most SNS users tend to be young adults aged 18 to 29 years [23, 28]. In particular, college students' use of SNS is high; a study found that 94% of United States (US) undergraduates use Facebook and spend between 10 and 30 minutes online daily [23]. Prior research investigating the acceptance or adoption of technological innovations have used constructs such as perceived usefulness and perceived ease of use taken from the technology acceptance model (TAM) and theory of reasoned action (TRA) [11,14]. Some SNS researchers investigating an individual's use of SNS and related tools have also based their studies on such theoretical perspectives [18, 24, 29, 35]. These frameworks have increased understanding of factors influencing the acceptance of SNS by individuals.

However, researchers have started to express doubts about the suitability of classical individual-based models in investigating an individual's adoption of emerging tools, such as SNS, which are primarily designed to accommodate complex social communication and interaction [8, 9]. There is a strong need for researchers to employ theoretical models that accommodate social imperatives of technology's use. It is safe to suggest that individual-based models have their inherent limitations because they tend to downplay "the nature of technology acceptance in social computing situations, where the technology is embraced rather than simply accepted by the user, and where the action made possible by technology is seen as a behavior embedded in society" [33, p.149].

The theory of planned behavior (TPB) [1] would seem a reasonable option given its inclusion of social influence as an important motivation for an individual to accept or engage in a specified behavior. Accordingly, some SNS researchers examining students' SNS use behavior have utilized it or fused it with other models [2, 5, 22, 27]. The TPB posits that individual behavior is influenced by attitude, subjective norms, and perceived behavioral control. Attitude refers to an individual's positive or negative feelings toward engaging in a specified behavior, subjective norms describe an individual's perception of what people who are important to them think about a given behavior, and perceived behavioral control refers to an individual's perception of the difficulty of performing a behavior. The dependent variable in TPB, i.e. behavior, tends to encompass variables, including frequency and intensity of use, actual use, continuance participation, and so forth [2, 22, 27]. Others [7] have argued that researchers using the TPB "also need to better conceptualize system usage so as to include a broader perspective of what users actually do in and around the notion of system use."

In light of how people use SNS, two behavioral variables, i.e. embracement and embedment, which are relevant to the use of technological innovations in social milieu, are included in this study. Embracement refers to the degree to which technology is being accepted willingly; it also refers to the degree to which technology is being viewed in a positive light [33]. Embedment refers to the extent to which the user views the technology as being a necessity to them and others in their group [6, 33]. This study replaced attitude in the TPB model with perceived enjoyment, given that SNS researchers [21, 22] found the latter to be an important factor in stimulating the acceptance of such tools. In summary, attitude was not considered in this study because prior researchers [e.g. 29, 35] have already used it to examine technology acceptance; however, few have explored the role of perceived enjoyment on SNS acceptance. That said, Venkatesh [34, p. 351] described perceived enjoyment as the extent to which "the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use." Indeed, Ajzen [1] noted that the TPB can be strengthened with theoretically justifiable constructs to improve its predictive power.

3. Research Hypotheses

Following the foregoing discussions, this study modifies the TPB in examining factors that could influence students' embedment with, and embracement of SNS. This study's research model (with the hypothesized paths) is shown in Figure 1. The impact of relevant control variables such as age, gender, discipline (program of study), year of study, national culture (i.e. individualism-collectivism) [17], and experience with web surfing were considered. None of these impacted the dependent variables.

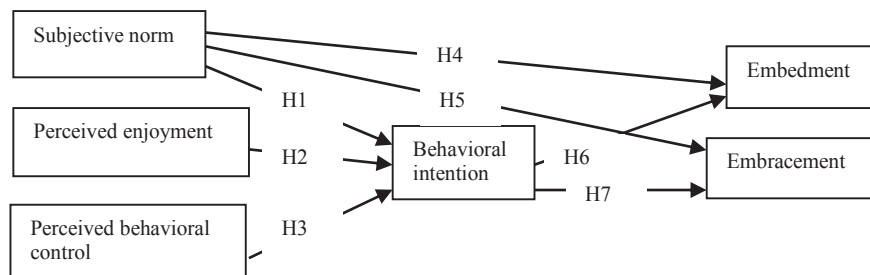


Fig. 1. The research model

It is expected that perceived enjoyment, perceived behavioral control, and subjective norm will positively influence students' SNS behavioral intention. Prior studies in the literature confirmed such relationships [8, 22, 35]. Given that subjective norm is consistently found to be a weaker predictor of behavioral intentions compared to perceived behavioral control [1, 4], and for the fact that other studies [5, 9, 22] examining the impact of subjective norm on SNS behavioral intention failed to confirm such a relationship, it was decided to model the direct effects of subjective norm on the embedment and embracement of SNS. Because decisions tend to be made based on indirect experiences and the views of others [1, 2, 5, 12]. Indeed, empirical evidence suggests that during pre-acceptance phases, subjective norm positively influenced behavioral intention [2, 5]. Beyond the intention phase, sustained use of social-based technologies becomes more intense if users believe that their group has placed more value on such tools [2, 12, 22, 28, 33 37]. Thus, it is expected that subjective norm will positively influence students' embedment with, and embracement of SNS. It is also expected that behavioral intention will positively influence students' behavioral roles of embedment with, and embracement of SNS. Previous meta-analytic studies of findings across diverse settings confirmed the significant association between intention and behavioral roles [4]. Hence, the following hypotheses are formulated:

H1: Perceived enjoyment will positively influence students' SNS behavioral intention

H2: Perceived behavioral control will positively influence students' SNS behavioral intention

H3: Subjective norm will positively influence students' SNS behavioral intention

H4: Subjective norm will positively influence students' embedment with SNS

H5: Subjective norm will positively influence students' embracement of SNS

H6: Behavioral intention will positively influence students' embedment with SNS

H7: Behavioral intention will positively influence students' embracement of SNS

4. Research Methods

4.1. Procedure and Participants

The research model was tested using a field survey. For the purposes of this study, it was decided to use a convenience sample of university students who use SNS. To overcome the Western-culture bias [17, 37], which tends to dominate research in the area, and to increase the generalizability of this study, it was decided to sample views from across differing cultural contexts. A pilot test was conducted to enhance the study's content validity. Forty (40)

individuals, including professors and students, participated in the pre-test of an initial draft of the questionnaire. Comments from the pre-test helped improve the quality of the final questionnaire, which was approved by the university research ethics board. Contacts, including professors in the four (4) countries - Malaysia, China, Nigeria and Canada - collected data from students who actively use at least one SNS tool. The countries were chosen for illustration purposes and for the fact that the researchers have reliable contacts in them. In each setting, a paper-based questionnaire was administered in person. Each country was different from the other on Hofstede's individualism-collectivism dimension [17]. A data sample size ranging from 200 to 220 responses per country was considered ideal. Data was collected from more than one source or location for each of the countries. To be sure that participants understood what key terms meant, the key items were defined in the questionnaire.

On average, the response rate for each country was about 93%, which is considered high. Completed questionnaires with a high degree of missing data and poorly completed responses were removed from the sample. Namely, missing data refers to entries that were left unanswered by the respondents. Usable questionnaires numbering 204, 201, 210, and 200 collected from Nigerian, Canadian, Chinese, and Malaysian undergrads, respectively, were used. A total of 815 questionnaires were used for analysis. There were 427 females and 378 males in the sample with 10 missing data. The participants' ages were normally distributed for a sample of undergraduates. The data showed that 96% used Facebook, which means that the majority of the respondents were familiar with the most popular SNS [13, 25, 26]. The data has a good distribution of students studying varying subjects, such as science and engineering (30%) and social science, humanities, and art (70%). Seventy eight percent (78%) of the participants were aged between 19 and 27 yrs. Data normality tests, using Kolmogorov-Smirnov or Shapiro-Wilk indicators, showed that the respondents' years of Internet usage, frequency of SNS use, and so forth was normally distributed.

4.2. Research Constructs and Measures

The measuring items were taken from previously validated works. The scales for subjective norm (SUBN), perceived enjoyment (PENJ), and perceived behavioral control (PERC) were adapted from Venkatesh and Bala [34]. The behavioral intention's (BEHI) scale was modified from Cheung and Lee [8]. Measures for embracement (EMBR) and embedment (EMBE) constructs were developed from discussions in Baron et al. [6] and Vannoy and Palvia [33]. The multi-items were anchored on a seven-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (7), in which participants were asked to indicate an appropriate response. The measurement items and their factor loadings are provided in Table 1.

Table 1. The questionnaire's items, their descriptive statistics, and item loadings (Contd.)

Construct	Measuring item	Mean	S.D.	Loading (t value)
Subjective norm (Mean = 4.3321; S.D. = 1.5882)	People who influence me think that I should use SNS (e.g. Facebook).	4.1571	1.5892	0.8416 (14.5882)
	People who are important in my life think that I should use SNS (e.g. Facebook).	4.1215	1.5919	0.8649 (19.8934)
	My friends think I should use SNS (e.g. Facebook).	4.7178	1.5835	0.8562 (22.5480)
Perceived enjoyment (Mean = 5.0101; S.D. = 1.4360)	Using SNS (e.g. Facebook) provides me with a lot of fun.	4.9926	1.4177	0.7731 (10.0730)
	I have fun using SNS (e.g. Facebook).	5.0982	1.4212	0.9276 (54.9068)
	The process of using SNS (e.g. Facebook) is pleasant.	5.0810	1.3784	0.9088 (36.5104)
	SNS (e.g. Facebook) does not bore me.	4.8687	1.5266	0.8150 (14.5965)
Perceived behavioral control (Mean = 5.375; S.D. = 1.3476)	My interaction with SNS (e.g. Facebook) is clear and understandable	5.2969	1.3638	0.8582 (22.6969)
	It is easy for me to use SNS (e.g. Facebook).	5.5497	1.2915	0.8555 (19.4674)
	I find it easy to get SNS (e.g. Facebook) do what I want it to do.	5.3988	1.3635	0.8614 (26.3450)
	Learning to use SNS (e.g. Facebook) to enhance my social life is easy for me.	5.2564	1.3716	0.7989 (13.3153)
Embedment (Mean = 4.7371; S.D. = 1.4490)	I accept that SNS (e.g. Facebook) is an important embedment in my social life.	4.8356	1.4426	0.8749 (30.3305)
	My group of friends accepts that SNS (e.g. Facebook) is an important embedment in their social lives.	4.9448	1.3386	0.8257 (16.9020)

	I accept that SNS (e.g. Facebook) is a firm part of my well-being.	4.4049	1.5566	0.8475 (17.154)
	My group of friends accepts that SNS (e.g. Facebook) is a firm part of our well-being.	4.7632	1.4584	0.7753 (10.3748)
Embracement (Mean = 5.0067; S.D. = 1.3855)	I foresee no difficulty in embracing SNS (e.g. Facebook) use.	5.0736	1.4602	0.8470 (20.8765)
	My group of friends using SNS (e.g. Facebook) sees no difficulty in embracing this social tool.	5.2110	1.3373	0.8643 (21.7955)
	The embracement of SNS (e.g. Facebook) is both important and relevant to me.	4.7767	1.3973	0.8635 (24.9072)
	The embracement of SNS (e.g. Facebook) is both important and relevant to my group of friends.	4.9656	1.3471	0.8300 (15.4857)
Behavioral intention (Mean = 5.3301; S.D. = 1.4886)	Assuming I had access to the Internet, I intend to use SNS (e.g. Facebook).	5.1791	1.4612	0.8928 (33.0649)
	I predict I will use SNS (e.g. Facebook) in the coming 2 weeks.	5.3681	1.4868	0.9348 (59.980)
	I am certain that I will use SNS (e.g. Facebook) to interact with my friends in the coming 2 weeks.	5.4429	1.5178	0.8870 (22.7314)

5. Data Analysis

The partial least squares (PLS) technique was used for data analysis. PLS is similar to regression analysis; however, it permits the utilization of latent constructs. As per predictive testing, PLS is more suitable than covariance-based tools, for example, LISREL for models examining theory development conceptualizations [10]. On the other hand, covariance-based methods are more suitable for testing established conceptualizations [10]. PLS recognizes two components of a casual model: the measurement and the structural models.

The measurement model provides information about the psychometric properties of the model like internal consistency, convergent, and discriminant validities. Composite reliability (COR) and Cronbach's alpha (CRA) values above 0.7 are considered adequate for assessing the internal consistency of variables [10]. The COR and CRA entries in Table 2 show that the study's data is consistently above 0.7. Fornell and Larcker [15] recommended that the average variance extracted (AVE) criterion be followed in assessing convergent validity. An AVE value of 0.50 is ideal. This study's AVEs, as seen in Table 2, were adequate. Among other considerations, discriminant validity is assured when the following two conditions are met: (a) the value of the AVE is above the threshold value of 0.50; and (b) the square root of the AVEs is larger than all other cross-correlations. Table 2 shows that the AVE ranged from 0.72 to 0.82, and in no case was any correlation between the constructs greater than the squared root of AVE (the principal diagonal element). Thus, the results indicated that the study's measures were psychometrically adequate.

Table 2. Composite reliabilities, Cronbach alphas, AVEs, and inter-construct correlations

	AVE	COR	CRA	BEHI	EMBE	EMBR	PENJ	PERC	SUBN
BEHI	0.82	0.93	0.89	0.91					
EMBE	0.69	0.90	0.85	0.46	0.95				
EMBR	0.72	0.91	0.87	0.56	0.63	0.95			
PENJ	0.74	0.92	0.88	0.62	0.54	0.56	0.86		
PERC	0.74	0.89	0.82	0.59	0.38	0.48	0.53	0.86	
SUBN	0.73	0.89	0.82	0.28	0.40	0.32	0.39	0.28	0.85

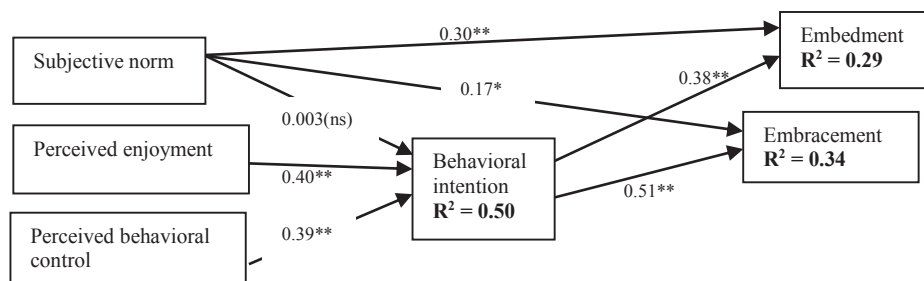
Notes: a) Composite reliability (COR), Cronbach alpha (CRA), Average variance extracted (AVE);

b) The bold fonts in the leading diagonals are the square root of AVEs; c) Off-diagonal elements are correlations among latent constructs; d) EMBE = Embedment; EMBR = Embracement; BEHI = Behavior Intention; PENJ = Perceived Enjoyment; PERC = Perceived Behavioral Control; SUBN = Subjective Norm.

The structural model provides information on hypothesized relationships using the path coefficients (β) and the squared R (R^2). Path significance levels (t-values) are estimated by the bootstrapping method with a sample of 1000 cases. The SmartPLS 2.0 results for the β s and the R^2 are shown in Figure 2. Six (6) out of the seven (7) hypotheses were supported. The data did not support H1 ($\beta = 0.003$), meaning that the subjective norm was not found to positively

influence students' behavioral intention. The result lent credence to findings [5, 9, 22] suggesting that subjective norm mattered less in shaping students' behavioral intention for SNS. Put differently, subjective norm may be of little value where other relevant group-related roles such as embedment of and embracement with specific technologies are being examined. Perceived enjoyment positively influenced behavioral intention to support H2 ($\beta = 0.40$). The hypothesis (H3) indicating that perceived behavioral control would positively influence behavioral intention was confirmed ($\beta = 0.39$).

Both H4 and H5 were affirmed to show that subjective norm positively influenced students' embedment with ($\beta = 0.30$) and embracement of SNS ($\beta = 0.17$). The data supported H6 and H7, confirming that behavioral intention positively influenced students' embedment with ($\beta = 0.38$), and embracement of ($\beta = 0.51$) SNS. The constructs of subjective norm, perceived enjoyment, and perceived behavioral control jointly explained 50% of the variance in the behavioral intention construct. Both subjective norm and behavioral intention interpreted 29% of the variance in embedment. Subjective norm and behavioral intention explained 34% of the variance in embracement. This information suggests that the amount of variance explained by the study's variables is meaningful [10].



Path significance: * $p < 0.05$, ** $p < 0.001$, ns = not significant

Fig. 2. The PLS results

6. Discussions and Conclusion

This study is designed to examine psychological factors influencing students' embedment with, and embracement of SNS. An appropriate theoretical perspective, i.e. TPB, which was modified to include such variables as enjoyment, embedment, and embracement, was used. To some degree, the study's results provided support for the original TPB framework [4]. The relationship between subjective norm and behavioral intention was however unconfirmed as others had previously indicated to suggest that, beyond pre-acceptance of SNS and other technologies in social computing contexts, the opinions of others may not be as important as ensuing behavioral roles such as the embedment with, and embracement of such tools. The relationships between students' behavioral intention regarding SNS acceptance and behavior, i.e. embedment and embracement, in this instance, were found to be significant.

The data supported the view suggesting that students who believe they derive some amount of enjoyment from SNS tend to have positive behavioral intentions toward such technologies [12, 21, 22, 23, 28]. The foregoing insight may help shed light on the overwhelming positive perceptions that students from around the world have for SNS. It is not surprising that students who do not find SNS difficult to use are the ones that develop positive intentions toward such use. It is safe to note that SNS that are difficult to use will not garner students' patronage [18, 24, 29, 35]. For example, a once-popular social-based tool, Digg, lost followers in the virtual community when users discovered that its newly released version was unstable and poorly designed, i.e. not easy to use [20]. Increased positive intention to engage with SNS boded well for students' embedment with, and embracement of SNS. That is, students' willingness to accept SNS may be dependent on the opinions of others in their social lives.

This study showed that little or no meaningful insight emerged regarding the direct influence of subjective norm on SNS' behavioral intention for reasons already espoused; however, reasonable interpretations surfaced when subjective norm was designed to directly impact the constructs of embedment and embracement. These results mean that the opinions of others in a student's group may matter in determining the extent to which they continue to accept SNS willingly and/or attach enhanced value to such technologies. This study's findings mirror observations related to peoples' embedment with, and embracement of technological innovations such as the Internet, mobile phones, and technologies elsewhere [6, 16]. To sum, students' acceptance of SNS will continue to be high if they continue to value the normative influences of others in their group.

This study has implication for research. First, it has responded to the call made by researchers [7, 8, 9, 33] for researchers investigating the acceptance/adoption of technologies in social computing contexts to consider employing appropriate theoretical frameworks that do not diminish the place of social influence. Second, this research has extended TPB's applicability to the investigation of users' (i.e. students') acceptance of SNS. Third, it is among the first to propose variables for the constructs of embedment and embracement, which others can build upon. Fourth, the findings of the study generally add to the growing body of work investigating psychological factors influencing students' use of SNS. There are also implications for practitioners (e.g. SNS developers, educators, business managers) as well. Developers of SNS should constantly develop features that an average user can relate to and enjoy. Developers should continue to enhance features such as newsfeeds that foster a sense of community among users; with such, the roles and values placed on such technologies will increase further. Given that online learning environments are promoting group-oriented learning approaches [3, 19], educators could encourage university students to form close associations with peers having similar values or interests as themselves so as to bolster group embedment and embracement of online learning technologies. The marketing discipline has also suggested that reference group influence has a bearing on an individual's purchasing decisions [30]. To that end, business organizations and marketers should continue to target groups - students and professionals - on SNS in order to promote their products and services to group members.

This study has some limitations: a) the data came from a cross-sectional field survey; longitudinal data may facilitate more insight, b) participants might have provided socially desirable responses to some of the questions to negatively impact the results, and c) the study's results should be interpreted in the light of its noted limitations. Future study should endeavor to overcome the shortcomings in this study. Other relevant theories such as social cognitive theory (SCT) could be incorporated into the proposed research model.

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