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An Exploration of Social Networking Sites (SNS) Adoption in Malaysia Using Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB) And Intrinsic Motivation

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Abstract

The objective of the paper is to explore the factors that encourage students to adopt social network sites (SNS) in Malaysia and to use the study's findings to develop guidelines for SNS providers on how to maximize the rate of adoption. A conceptual model of Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB) and intrinsic motivation is proposed and empirically tested in the context of SNS usage. Structural Equation modelling was used on the survey data from 283 university students to test the model fit and corresponding hypotheses. The results show that both TAM and TPB were supported in their predictions of SNS usage intention and perceived enjoyment is a more significant antecedent of attitude as compared to perceived usefulness. Other than communicating with others, the users are looking for fun and enjoyment from using SNS. The relationships between the factors were also presented. Theoretical and managerial implications are discussed at the end of the article. The paper has addressed two limitations that provide opportunities for other researchers to explore them in depth in the future in the similar field of social network sites (SNS). The

limitations are presented in the conclusion's part. For researchers, this paper provides a framework to identify and understand the way the potential key factors contribute to the adoption of SNS. For practitioners, this framework lists the features that specifically attract SNS users. Understanding users' preferences is of major importance in e-businesses for making strategic decisions to increase user satisfaction, as well as improving the performance of the business.

Keywords: Social network sites (SNS); Technology acceptance model (TAM); Theory of planned behaviour (TPB); intrinsic motivation.

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1. Introduction

"The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it". (Weiser, 1991).

Social Network Sites (SNS) are a new emerging genre of community-based websites, which provide an ideal platform for sharing the interests and social interaction amongst various ethnic groups having common thoughts on a particular topic or theme. Various methods are used to imitate a dialogue amongst the community members, and the most commonly used mediums are emails and instant messaging. According to Boyd and Ellison (2007), Social Network Sites (SNS) can be characterize as web-based services that allow individuals to 1) construct a web presence usually including a photo and descriptors like location, age, study concentration and interests, 2) publicly display a list of other users with whom they share a connection, and 3) to traverse those list of connections to view the profiles of others within the system. Social Network Sites (SNS) are community building websites that allow people to share interests or activities and explore the interests or activities of others. SNSs particularly evolve around special interests or shared contexts like students populations at universities (Lampe *et al.*, 2007), i.e. students use them typically to stay in contact, communicate with and "spy" on their online friends. Studies in the U.S. which suggest that university students will use SNS to communicate mainly with their university friends chatting, joking and organising their offline meetings and group work will resonate in the UK, and in other sectors. Students will probably social network whilst they are at their computer studying rather than at separate times (Golder *et al.*, 2007). Table I, lists a number of SNS out of hundreds over available in the market. As of this writing, there are hundreds of SNSs, with various technological affordances, supporting a wide range of interests and practices.

This study focuses on new channel of communication and information technology (IT) adoption in a developing country, namely Malaysia, where social network sites (SNS) is still emerging but offers potential benefits to consumers in that country. Applying Technology Acceptance Model (TAM) model by Davis (1989) was based primarily on its parsimony and predictive power, which makes it easy to apply in different information system devices (Amin *et al.*, 2007; Guriting and Ndubisi, 2006). Furthermore, TAM provides a way of critically understanding the relationships between various variables namely; perceived usefulness, perceived ease of use and usage intentions. In addition, this study integrated theory of planned behavior (TPB) by Fishbein and

Azjen (1975), and intrinsic motivation by Deci (1975) to provide better understanding on SNS adoption factors among university students. Furthermore, SNS vendors would be eager to know more about the underlying factors affecting the adoption of SNS among users and subsequently the directions of improvement for their products. In fact the business model is getting increasingly competitive and challenging with emergence of new SNS (Boyd and Ellison (2007).

Table I.

List of selected SNS

SNS	Description	Registered User	Registration	URL Address
Friendster	General. Popular in <u>ASEAN</u> countries	90,000,000	Open to people 16 and older	www.friendster.com
Facebook	General	175,000,000	Open to people 13 and older	www.facebook.com
Tagged	General	70,000,000	Open	www.tagged.com
MySpace	General	253,145,404	Open to ages 14 and up.	www.myspace.com
hi5	General. Popular in Angola, Portugal, Cyprus, Romania, Thailand, Central Africa and Latin America	80,000,000	Open to people 13 and older	www.hi5.com
myYearbook	General	5,100,000	Open to age 13 and up & Grades 9 and up	www.myyearbook.com

(Source: http://en.wikipedia.org/wiki/List_of_social_network_websites)

1.1 Study motivation

Objectively, this study set out 2 main reasons for the study of Social Network sites (SNS). Firstly, the output of this study will be of importance in explaining the causes leading to the university student's adoption of SNS. Secondly, despite the SNS gaining acceptance in universities around the world, the study on students' adoption of SNS is still unexplored fully in Malaysia. In other words, the study's findings on factors influencing SNS adoption in Malaysia may provide useful insights for other developing countries in this part of the world. In the Asian region, the giant three in terms of the number of internet users are China, South Korea and Taiwan (Shih and Fang, 2004; ACNielsen, 2001) while Hong Kong and Singapore are regarded as the leaders in the adoption of internet banking (Amin *et al.*, 2007; Shih and Fang, 2004). Studies tend to focus on these countries, for example, the Shih and Fang's (2004) study of Taiwan and Tan and Teo's (2000) study of Singapore, but few studies appear to have been carried out in lesser developed countries such as Malaysia. The aim of the study is thus to propose a conceptual framework to help better understand the process of the adoption of SNSs in Malaysia and to use the study's findings to develop guidelines for SNS

providers on how to maximize the rate of adoption.

The paper proceeds as follows. This paper contains of 4 sections. In the first section, we present the research model, and in section two, we provide the discussion on literature and the development of related hypotheses. The discussion on research methodology is in section three, and the fourth section is on findings. This paper concludes by discussing the contributions, practical implications and limitations of the study.

2. Literature review

2.1 An overview of SNS studies

Social network sites (SNS) are increasingly attracting the attention of academic and practitioners intrigued by their affordances and reach (Boyd and Ellison, 2007) and Social Network Sites (SNS) have achieved phenomenal success since the launch of sixdegrees.com in 1997 (Jim, 2008). Original sites such as Friendster, Lunarstorm and MiGente, are now all dwarfed by the phenomenally successful Myspace (Boyd and Ellison, 2007), and Facebook (Consumer Affairs, 2006). A useful historical record of the development of Social Network sites was made by Boyd and Ellison in 2007 (Donath, 2004), although more work is needed to understand the gratifications delivered, how users derive a sense of identity and the cross cultural implications to users. Social science researchers have begun to investigate what the impact of this might be on society. Typical articles have investigated issues such as Identity (Boyd, 2006), Privacy (Gross, 2005), E-learning (Mazer *et al.*, 2007), Social capital (Ellison *et al.*, 2007) and Teenage use (Boyd, 2007). A special issue of the Journal for Computer-Mediated Communications was dedicated to studies of social network sites.

2.2 Model, construct, and hypotheses development

TAM is one of the most influential extensions of Ajzen and Fishbein's theory of reasoned action (TRA) in the literature. It was developed by Fred Davis and Richard Bagozzi (Bagozzi *et al.*, 1992; Davis *et al.*, 1989). TAM replaces many of TRA's attitude measures with the two technology acceptance measures— *ease of use*, and *usefulness*. TRA and TAM, both of which have strong behavioural elements, assume that when someone forms an intention to act, that they will be free to act without limitation. Later, Azjen and Fishbein (1985, 1991) introduced and tested extended version of TRA called Theory of Planned Behavior (TPB) to predict usage intention by introducing 'Perceived Behavioral Control' as new predictor. Perceived behavioural control reflects perceptions of internal and external constraints on behaviour (Taylor and Todd, 1995). It describes a user's perception if they have the necessary resources, capability and a sense of control in performing the behaviour (Lu *et al.*, 2008). Much effort has been devoted to modify TAM for different IS applications and use contexts other than the workplace. These modifications and extensions of TAM are summarized in Table II (see appendix). Extrinsic motivation refers to the performance of an activity because it leads instrumental rewards that are distinct from the activity itself (Zhang *et al.*, 2008). Intrinsic motivation refers to the performance of an activity for no apparent reinforcement other than the process of performing the activity per se (Davis *et al.*, 1992). Researchers found that people will spend more time and effort on task with high level of intrinsic motivation. Intrinsic factor does in fact provide for better explanation of IT adoption (Zhang *et al.*,

2008).

In addition with the ability of this model, Mathieson (1991) found that TAM explained over 69 per cent of the variance in college students' behavioural intentions to use spreadsheets, while TPB explained approximately 62 per cent. TAM was superior in its ability to explain students' intentions to use shop-bots in an internet purchasing activity (Gentry and Calantone, 2002). In applying TAM to student use of the internet, Anandarajan *et al.* (2000) found that perceived usefulness was related to time spent on the internet. Ease of use correlated positively with use of the internet for business activity. In Selim (2003) investigation, suggested that students' course web site use tended to be greater when the site was viewed as being useful and easy to use. In a partial test of the theory of planned behaviour, George (2002) reported that attitude was related to intention to use the internet for purchasing products. Furthermore, intention was linked to actual purchasing behaviour. To summarize, existing evidence indicates that TAM and TPB is a powerful predictor of users' technology acceptance among college students in India (Fusilier and Durlabhji, 2005). Although fewer studies have investigated TPB in the technology usage context, it has also appears respectable as an explanatory framework. However, in this study we focus only on testing the social networking sites using the integrated model of TAM & TPB, rather than testing the extended model with social effect variables.

2.3 Perceived ease of use (PEOU)

PEOU is defined as the degree to which the prospective user expects the potential system to be free of effort (Davis *et al.*, 1989). There is theoretical and empirical evidence supporting Perceived Ease of Use (PEOU) as one of the key determinants to information system (IS) use (Guriting and Ndubisi, 2006; Ndubisi *et al.*, 2003; McKechnie *et al.*, 2006; Adams *et al.*, 1992). In Malaysia, previous studies have well documented the importance of perceived ease of use in explaining Information System usage intentions since was first introduced by Davis. For instance, mobile banking in Malaysia (Amin *et al.*, 2007), internet banking acceptance (Ramayah and Suki, 2006). Furthermore, Amin *et al.* (2007) found that there is a significant relationship between perceived ease of use and mobile banking usage intentions by Malaysians. The significant impact between perceived ease of use and usage intentions is also found in Kleijnen *et al.* (2004) and Wang *et al.* (2003) in Netherlands and Taiwan respectively. Researchers of online services have built, evaluated, and modified numerous frameworks to understand the adoption of online service since the online services were first introduced. Kling (1994) argued that online service should be developed based upon interactive features, multimedia content, and capacity for inexpensive customization; Dabholkar *et al.* (1996) and Davis *et al.* (1989) found ease of use and fun to be important factors in adoption. Based on these findings, the researchers believe that perceived ease of use is important in explaining the SNS adoption/usage intentions among university students. In line with this, we propose the following hypotheses:

- H1: Perceived ease of use positively affects perceived usefulness of SNS.
- H2: Perceived ease of use positively affects attitude to use SNS.

2.4 Perceived usefulness (PU)

Perceived usefulness was defined by Davis (1989) as: “the degree to which a person believes that using a particular system would enhance his or her job performance”. Earlier research on the adoption of innovations also suggested a prominent role for perceived ease of use (Tornatzky and Klein, 1982). Based on Davis (1993) arguments in job related productivity, performance, and effectiveness study, PU has a direct effect on intention to use over and above its influence via attitudes (Taylor and Todd, 2001). Furthermore, PU has been constantly identified as an important driver of behavior intention to use a new system (BI) and actual system use (B) both in offline and online technology acceptance research (Venkatesh and Davis, 2000). In Malaysian environment, prior researchers have found significant relationship between perceived usefulness and usage Intention (Amin *et al.*, 2007; Ramayah and Suki, 2006; Ndubisi *et al.*, 2001). Positive relationship between perceived usefulness and usage Intention was found in mobile banking acceptance (Amin, 2007), mobile personal computer usage (Ramayah and Suki, (2006) and, Ndubisi *et al.*, (2001) confirms the perceived usefulness of information technology among entrepreneurs in Malaysia. Given the focus of this study on the SNS, the definition of PU was modified to “the extent to which a user believes that using the SNS will most enhance his or her task outcomes.” A hypothesis is proposed for PU:

- H3: Perceived usefulness positively affects attitude to use SNS.
H4: Perceived usefulness positively affects intention to use SNS.

2.5 Perceived enjoyment (PE)

Enjoyment factor is used in many studies to represent intrinsic motivation in discussion of how intrinsic motivators influence individuals IT acceptance behaviour (Zhang *et al.*, 2008). Perceived enjoyment is defined as the extent to which the activity of using a technology is perceived to be enjoyable in its own right, aside from any performance consequences resulting from technology use (Venkatesh, 2000). This definition is also supported by Davis *et al.* (1992). When a technology is fun and pleasing to use, users will be intrinsically motivated to adopt it (Lu *et al.*, 2008). Previous studies have documented the importance of perceived enjoyment particularly in electronic usage. (Amin *et al.*, 2007; Nysveen *et al.*, 2005., Teo *et al.*, 1999; Igbaria *et al.*, 1995). According to Nysveen *et al.* (2005), perceived enjoyment and usage intention of mobile chatting have significant correlation. In early study by Teo *et al.* (1999) also found that perceived enjoyment has positive correlation with the frequency of internet usage. However in more recent findings by Amin *et al.* (2008) in SMS exam result query system model (SERQSM) study found that there is no relationship between perceived enjoyment and usage intentions. Moreover, Igbaria *et al.* (1995) also noted that perceived enjoyment does not significantly affect the acceptance of data processing systems. Based on the above findings, we propose the fifth hypothesis.

- H5: Perceived enjoyment positively affects attitude to use SNS.

2.6 Attitude (A)

Attitude has long been identified as a caused of Intention (June *et al.*, 2003). According to Azjen and Fishbien (1975) attitude can be classified into two main construct, attitude toward the objects and attitude toward the behavior. Based on Fusilier and Durlabhji

(2005) study on college students in India, they found that the effect of attitude on intention appeared to be attractive with subjective norm rather than as a main effect. Results suggested that those with highly positive attitudes were relatively unaffected by subjective norm or others' opinions. Hence, we would expect that attitude has a positive influence on behavioral intention to use social networking sites.

H6: Attitude to use SNS positively affects intention to use SNS.

2.7 Social norms (SN)

Subjective Norm is defined as a "person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein and Ajzen, 1975, p. 302). Social norm or normative pressure direct effect on behavioral intention has been validated in many previous studies based on TRA and TPB model (Ajzen, 1991; Ajzen and Fishbein, 1980; Nysveen *et al.*, 2005; Amin *et al.*, 2007; Kleijnen *et al.*, 2004). Amin *et al.* (2007) found social norm to be important construct that explains the usage of mobile banking in Malaysia. Furthermore, Nysveen *et al.* (2005) noted that Social Norm is important variables to explain the success of the system use. Technology usage in workplace also found the social norm as essential elements in the development of people intention to use wireless finance in Netherlands (Kleijnen *et al.*, 2004). Since TRA & TPB has been successfully applied in online consumer behavior, technology acceptance and system use (see Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980; Pavlou, 2003), SN is proposed as a direct antecedent of behavioral intention in this study. One hypothesis is proposed for SN:

H7: Social Norms positively affects intention to use SNS.

2.8 Perceived behavioral control

According to Azjen (1991) in Theory of Planned Behavior (TPB), "perceived behavioral control" relates to an individual's performance of a certain behavior is determine by his or her intent to perform that behavior. Attitudes are informed by beliefs, norms are informed by normative beliefs and motivation to comply, and perceived behavioral control are informed by beliefs about individual's possession of the opportunities and resources needed to engage in the behavior (see Azjen, 1991 in Jeoy f. George, 2002). Previous studies have documented the importance effects of perceived behavioral control in usage intention in different countries (George, 2005; Jaruwachirathanakul and Fink, 2005; Fusilier and Durlabhji, 2005). Based on the prior research, this study hypothesized the following:

H8: Perceived behavioural control positively affects intention to use SNS.

H9: Perceived behavioural control positively affects actual use of SNS.

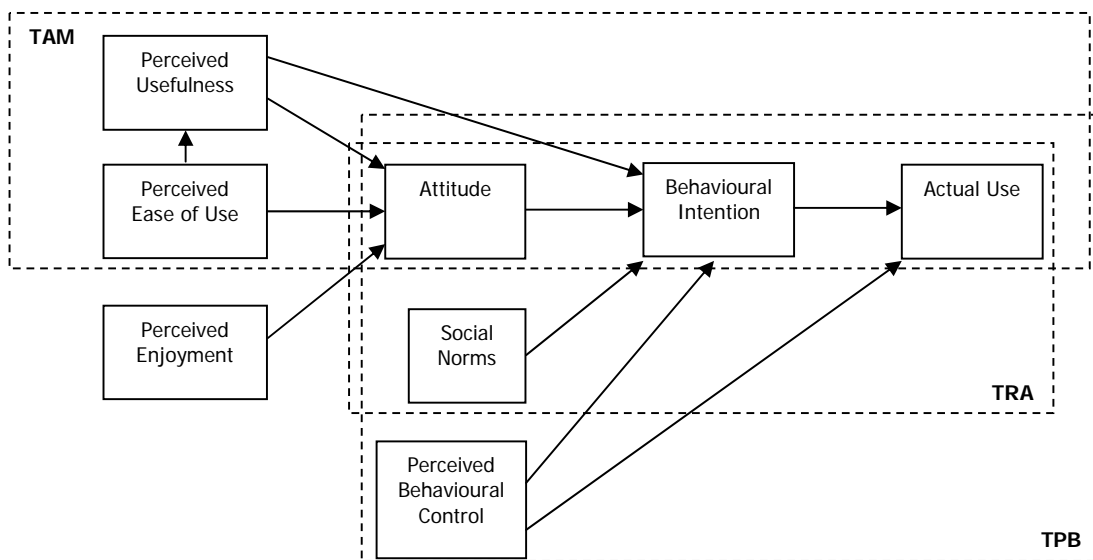
2.9 Intention

Studies have supported the notion that behavioral intentions are found to have a positive effect on behavior (see Hung *et al.*, 2003; Tung, 2004; Nysveen *et al.*, 2005 in Amin *et al.*, 2007). Finally, given a sufficient degree of *actual* control over the behavior, people are expected to carry out their "intentions" when the opportunity arises. "Intention" is thus

assumed to be the immediate antecedent of behavior (Ajzen, 1991). In summary, attitude toward the behavior, social norm, and perception of behavioral control lead to the formation of a behavioral *intention*. Based on the above arguments, the following hypotheses are presented:

H10: Intention to use SNS positively affects actual use of SNS.

Figure 1.
Research model



(Source: Research model is adopted from Davis (1989) and Fishbein and Ajzen (1975): Technology Acceptance Model (TAM) was developed by Davis and it was extended model of the existing Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975).)

3. Methodology

The aim of this research is to explore the factors that encourage students to adopt social network sites (SNS) in Malaysia and to use the study's findings to develop strategies for SNS providers on how to maximize the rate of adoption. The study was conducted on the first quarter of 2009 by using questionnaire survey. It has basically two sections, A and B. Section A was used to gather demographic information of the respondents while section B was used to measure the constructs in the research model by using a 5-point Likert scale, with options ranging from strongly disagree to strongly agree. Most of the measurement items were adapted from previous research with minor modifications to suit the research context. The items measuring actual SNS usage, intention to use SNS and perceived enjoyment (Pikkarainen *et al.*, 2004), of using SNS were adapted from Moon *et al.* (2001). Meanwhile, items measuring attitude, subjective norm and perceived behavioural control were adapted from Taylor and Todd (2001). The items measuring perceived usefulness and perceived ease of use were adapted from Davis (1989). The questionnaire was drafted and then reviewed by research group members for refinement, followed by a pre-test where it was further revised. The questionnaires were

distributed among students of University Malaysia Sabah (Labuan) by using stratified sampling method. The respondents consist of students from all faculties and from year one to final year. A total of 300 responses have been received, of which 283 are usable. Incomplete returned questionnaires have been eliminated.

4. Data analysis and result

Descriptive information of the sample is shown in Table III. As reported, most of the respondents (31.1%) surf Internet more than 15 hours weekly. Only 3.5 % do so less than an hour weekly. The most popular SNS among the respondents is Friendster where 95.4% are using it, followed by Facebook (43.8%), Tagged (33.9%), MySpace (23%), Hi5 (21.9%) and so on. The proposed model was evaluated using Structural Equation Modelling (SEM) analysis which consists of measurement model and structural model assessment. The measurement model represents how measured variables come together to represent constructs while structural model shows how constructs are associated with each other (Hair *et al.*, 2006). AMOS 16.0 was the statistical software used in the study.

Table III.

Descriptive information of the sample (N=283)

Measure	Value	Frequency	Percentage
Gender	Male	73	25.8
	Female	210	74.2
School / Faculty	Business (SPKAL)	124	43.8
	Information Technology (SSIL)	159	56.2
Year	1	83	29.3
	2	127	44.9
	3	73	25.8
Age	< 20	4	1.4
	20 – 22	214	76.5
	23 – 25	60	21.1
	>25	3	1.1
State of Origin (Malaysia)	Johor	18	6.4
	Kedah	17	6.0
	Kelantan	12	4.2
	KL	10	3.5
	Labuan	1	0.4
	Malacca	8	2.8
	Negeri Sembilan	12	4.2
	Pahang	10	3.5
	Penang	7	2.5
	Perak	27	9.5
	Perlis	1	0.4
	Pulau Pinang	1	0.4
	Sabah	87	30.7
	Sarawak	39	13.8

	Selangor	21	7.4
	Terengganu	8	2.8
Weekly hours surfing Internet	< 1	10	3.5
	1 - 5	83	29.3
	6 - 10	72	25.4
	11 - 15	29	10.2
	> 15	88	31.1
SNS in Use	Friendster	270	95.4
	Facebook	124	43.8
	Tagged	96	33.9
	MySpace	65	23.0
	Hi5	62	21.9
	MyYearBook	11	3.9
	Bebo	4	1.4
	Xing	2	0.7

Confirmatory factor analysis (CFA) was conducted to test the measurement model. A total of 3 items were dropped from further analysis due to cross loadings. They were one item from perceived usefulness, one item from perceived behavioural control and one item from behavioural intention. After re-specification, 19 items were retained. As shown in Table IV, Cronbach's alphas for all the constructs were over 0.7 showing good scale reliabilities (Bagozzi *et al.*, 1998). Most of the factor loadings for the items were over 0.7 while the average variance extracted (AVE) and construct reliability (CR) for each construct were over 0.5 and 0.7 respectively suggesting that the scale has good convergent validities as shown in Table IV.

Table IV.

Item loadings on related factor (N=283)

Factor	Item	Standard Loading	Average Variance Extracted (AVE)	Construct Reliability (CR)	Cronbach's Alpha
PEOU	PEOU1	0.851	0.63	0.83	0.82
	PEOU2	0.863			
	PEOU3	0.640			
PU	PU1	0.723	0.54	0.70	0.70
	PU2	0.749			
PE	PE1	0.764	0.70	0.90	0.87
	PE2	0.869			
	PE3	0.870			
ATT	ATT1	0.882	0.72	0.89	0.88
	ATT2	0.896			
	ATT3	0.766			
SN	SN1	0.843	0.74	0.85	0.85
	SN2	0.875			
PBC	PBC1	0.825	0.62	0.77	0.77
	PBC3	0.751			

BI	BI2	0.726	0.63	0.77	0.77
	BI3	0.861			
ACTUSE	ACTUSE1	0.685	0.61	0.76	0.73
	ACTUSE2	0.867			

The conservative approach for establishing discriminant validity is by comparing the average variance extracted (AVE) for each factor with the squared inter-construct correlations associated with the factor (Hair *et al.*, 2006). Almost all average variance extracted (AVE) were greater than the corresponding inter-construct squared correlations as shown in Table V thus showing discriminant validity.

Table V.
AVE and squared correlations (N=283)*

	PEOU	PU	PE	ATT	SN	PBC	BI	ACTUSE
PEOU	0.63							
PU	0.50	0.54						
PE	0.31	0.59	0.70					
ATT	0.39	0.69	0.66	0.72				
SN	0.14	0.43	0.23	0.27	0.74			
PBC	0.36	0.27	0.16	0.33	0.21	0.62		
BI	0.38	0.68	0.45	0.55	0.31	0.37	0.63	
ACTUSE	0.17	0.22	0.19	0.26	0.04	0.09	0.26	0.61

Note: *Diagonal shows the AVE and the values below the diagonal are squared correlations

In addition, principal component analysis (PCA) was also conducted to show convergent and discriminant validities as shown in Table VI. All items have high loadings on their related factors and low cross loading indicating convergent and discriminant validities.

Table VI.
Principal component analysis (varimax rotation)

	Component							
	PE	PEOU	ATT	SN	ACTU SE	PBC	BI	PU
ACTUSE 1					.889*			
ACTUSE 2					.823			
PEOU1		.745						
PEOU2		.816						
PEOU3		.746						
PU1								.682
PU2								.569
PE1	.747							
PE2	.827							
PE3	.781							
ATT1			.725					
ATT2			.701					
ATT3			.673					
SN1				.870				
SN2				.868				
PBC1						.846		
PBC2						.808		
BI1							.848	
BI2							.583	

Note: *Only loadings larger than 0.4 are shown.

The fitness of the measurement model is shown in Table VII. The values for selected key fit indices were within the threshold of the recommended values, indicating that the measurement model provided a good fit to the data. Next, the structural model fit is examined as shown in Table VIII. The fit indices for the structural model were comparable to the measurement model, providing evidence of good overall fit. The result of the structural model analysis and hypothesis testing are shown in Figure 2 and Table VIII respectively.

Table VII.

Fitness of measurement model (general; N=283)

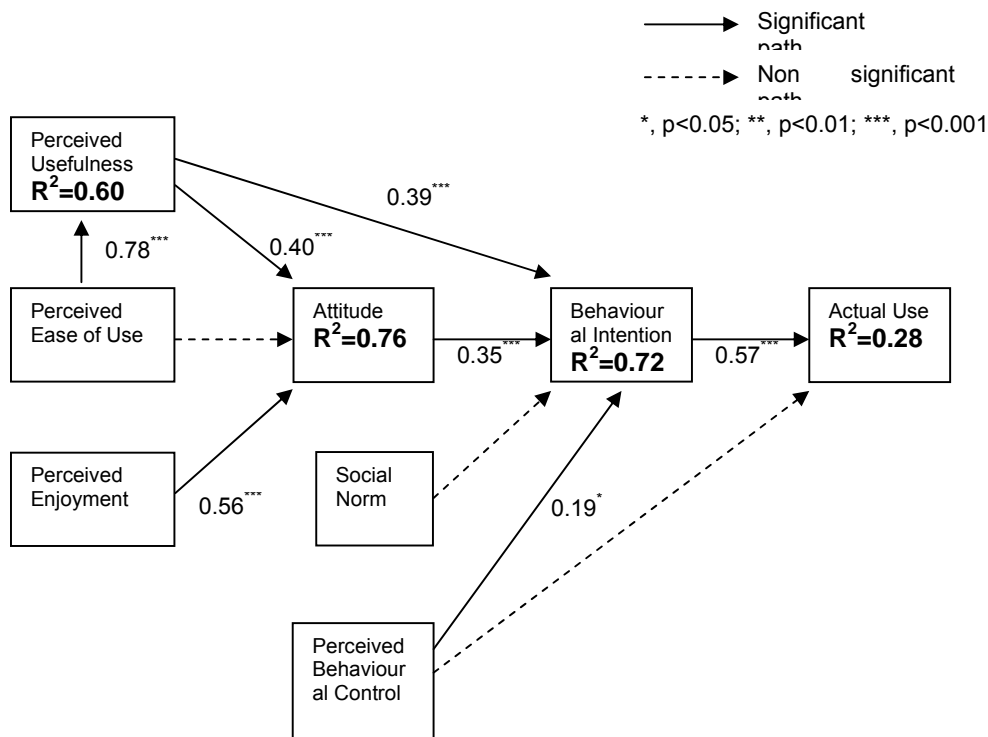
Fit Index	Recommended Value	Model Value	Suggested by Authors
X ² /df	< 3	1.636	Bentler and Bonett
GFI	> 0.8	0.931	Seyal et al.
AGFI	> 0.8	0.894	Scott
NFI	> 0.9	0.936	Bentler and Bonett
CFI	> 0.9	0.974	Bentler and Bonett
RMSEA	< 0.08	0.047	Hair et al.

Table VIII.

Fitness of structural model (general; N=283)

Fit Index	Recommended Value	Model Value	Suggested by Authors
X ² /df	< 3	2.257	Bentler and Bonett
GFI	> 0.8	0.901	Seyal et al.
AGFI	> 0.8	0.862	Scott
NFI	> 0.9	0.904	Bentler and Bonett
CFI	> 0.9	0.944	Bentler and Bonett
RMSEA	< 0.08	0.067	Hair et al.

Figure 2.
Structural model analysis (general; N=283)



5. Discussion

Generally, the R square for perceived usefulness, attitude, behavioural intention and actual use were 60%, 76%, 72% and 28% respectively indicating the research model has good predictive ability. Almost all of the hypotheses were supported except H2, H7 and H9. Perceived ease of use has significant effect on perceived usefulness, supporting H1 and corroborating results of previous researches on TAM. In other words, if a user feels that a particular SNS is easy to use, then he or she will be seeing it as useful. Perceived ease of use has no direct effect on attitude, rejecting H2. It was not surprising as according to Davis, perceived usefulness mediated the effect of perceived ease of use on other factors (Davis, 1989). Perceived usefulness strongly affected attitude and behavioural intention and thus supporting H3 and H4. In other words, if a

user notices the usefulness of a particular SNS, then he or she will be feeling good about it and more willing to use it.

Table IX.
Hypothesis testing results (general; N=283)

	Description	β	p value	Remarks
H1	Perceived ease of use positively affects perceived usefulness of SNS.	0.78	p<0.001	Supported
H2	Perceived ease of use positively affects attitude towards SNS.	0.06	0.594	Not Supported
H3	Perceived usefulness positively affects attitude towards SNS.	0.40	p<0.001	Supported
H4	Perceived usefulness positively affects intention to use SNS.	0.39	p<0.001	Supported
H5	Perceived enjoyment positively affects attitude towards SNS.	0.56	p<0.001	Supported
H6	Attitude towards SNS positively affects intention to use SNS.	0.35	p<0.001	Supported
H7	Social Norm positively affects intention to use SNS.	0.09	0.138	Not Supported
H8	Perceived behavioural control positively affects intention to use SNS.	0.19	p<0.05	Supported
H9	Perceived behavioural control positively affects actual use of SNS.	-0.06	0.504	Not Supported
H10	Intention to use SNS positively affects actual use of SNS.	0.57	p<0.001	Supported

Perceived enjoyment has significant effect on attitude towards SNS, supporting H5. In fact, the perceived enjoyment is a more significant antecedent of attitude as compared to perceived usefulness, supporting previous studies which argued that perceived usefulness played a critical role in work related environment only (Moon and Kim, 2001). Other than connecting with others, the users are looking for fun and enjoyment from using SNS. In other words, if a particular SNS can give enjoyment and happiness to a user, then he or she will be feeling good about it. Attitude strongly affects behavioural intention, supporting H6. In other words, if a user feels good about a particular SNS, then he or she will be more willing to use it. Unexpectedly, social norm has no direct effect on intention and thus rejecting H7. Prior studies found that the effect of social norm on intention is more significant in mandatory-usage context compared to voluntary-usage context as is the case with SNS (Chun *et al.*, 2006).

In addition, subjective norm has been found to be more important predictor for people with no prior experience and in early stages of system development (Taylor and Todd, 1995). Generally, the respondents might be lacking of experience in using SNS. Perceived behavioural control positively affects intention, supporting H8. In other words, if a particular SNS can solve a user's internal and external constraints such as resources, knowledge, skills and ability in using SNS, then he or she will be more willing to use it. However, no direct effect is observed between perceived behavioural control

and actual usage of SNS, rejecting H9. Finally, H10 is supported where intention to use SNS positively affects the actual use of SNS validating the established link between intention and actual behaviour. Generally, 28% of the variances in actual use were explained by intention. In other words, there are other factors other than intention those influence the actual use, and therefore opening up possibilities for future research.

Table X.
Hypothesis testing results (IT students; N=159)

	Description	β	p value	Remarks
H1	Perceived ease of use positively affects perceived usefulness of SNS.	0.82	p<0.001	Supported
H2	Perceived ease of use positively affects attitude towards SNS.	0.05	0.766	Not Supported
H3	Perceived usefulness positively affects attitude towards SNS.	0.43	p<0.01	Supported
H4	Perceived usefulness positively affects intention to use SNS.	0.29	p<0.05	Supported
H5	Perceived enjoyment positively affects attitude towards SNS.	0.57	p<0.001	Supported
H6	Attitude towards SNS positively affects intention to use SNS.	0.39	p<0.01	Supported
H7	Social Norm positively affects intention to use SNS.	0.16	p<0.05	Supported
H8	Perceived behavioural control positively affects intention to use SNS.	0.16	0.094	Not Supported
H9	Perceived behavioural control positively affects actual use of SNS.	0.06	0.615	Not Supported
H10	Intention to use SNS positively affects actual use of SNS.	0.57	p<0.001	Supported

Table XI.
Hypothesis testing results (business students; N=124)

	Description	β	p value	Remarks
H1	Perceived ease of use positively affects perceived usefulness of SNS.	0.69	p<0.001	Supported
H2	Perceived ease of use positively affects attitude towards SNS.	0.06	0.666	Not Supported
H3	Perceived usefulness positively affects attitude towards SNS.	0.38	p<0.05	Supported
H4	Perceived usefulness positively affects intention to use SNS.	0.37	p<0.01	Supported
H5	Perceived enjoyment positively affects attitude towards SNS.	0.55	p<0.001	Supported
H6	Attitude towards SNS positively affects intention to use SNS.	0.47	p<0.001	Supported

H7	Social Norm positively affects intention to use SNS.	-0.02	0.807	Not Supported
H8	Perceived behavioural control positively affects intention to use SNS.	0.35	p<0.05	Supported
H9	Perceived behavioural control positively affects actual use of SNS.	-0.68	p<0.01	Not Supported (negative relationship)
H10	Intention to use SNS positively affects actual use of SNS.	0.88	p<0.001	Supported

Separate analysis were also conducted to observe the differences between IT and business students. Both groups indicated adequate model fit. The result of the structural model analysis for each group are shown in Figure 3 and Figure 4 (see appendix) while the result of hypothesis testing for each group are given in Table X and Table XI. Perceived ease of use is a more important antecedent of perceived usefulness for IT students as compared to business students. Previous studies observed that the more the user experienced, the lower the effect of PEOU to PU (Bailey and Pearson, 1983). The IT students are assumed to be lacking of experience in using SNS. It is also possible that, IT students are more inclined to associate usefulness with ease of use due to education background. User friendliness is indeed a main priority in software development and tends to dictate the success or usefulness of a system. 68% of variances in perceived usefulness were explained by perceived ease of use for IT students as compared to 48% for business students.

Perceived enjoyment has significant effect on attitude towards SNS for both IT and business students. In fact, perceived enjoyment is a more important predictor of attitude than perceived usefulness for both groups, suggesting the importance of intrinsic motivation in user adoption of SNS. 86% of variances in attitude were explained by perceived usefulness and perceived enjoyment for IT students compared to 66% for business students. Social norm positively affects intention to use SNS for IT students but has no direct effect on intention to use for business students. Subjective norm has been found to be more important predictor for people with no prior experience and in early stages of system development [19], supporting the earlier assumption that IT students might be lacking of experience in using SNS. Perceived behavioural control positively affects intention to use SNS for business students. On the other hand as expected, perceived behavioural control has no direct effect on intention to use for IT students, as IT students face less constraint internally and externally in using SNS as they are more equipped with IT skills and resources. 72% of variances in intention were explained by perceived usefulness, attitude and social norm for IT students while 86% of variances in intention were explained by perceived usefulness, attitude and perceived behavioural control for business students. The hypothesis testing results for both groups were highly consistent with the general results as shown in Table XI. All of the hypotheses testing results were same except H7 and H8.

6. Conclusion

While shifting from offline to online is widely believed to be the theme of current service industry evolution around the world, research into online news service is still in its infancy. The Internet's unique nature of facilitating multifaceted interactive communication and virtual interpersonal/inter-organizational relationship is mostly uninvestigated in prior information system acceptance research. The study shed lights on the adoption factors of SNS among university students from the integrated perspectives of TAM, TPB and intrinsic motivation. The relationships between the factors were also presented. Based on the discussions earlier, the following guidelines were provided for SNS vendors for product improvement. One important aspect of SNS that the vendor cannot afford to neglect is *user friendliness*, as user's perception on usefulness relies heavily on his perception of *ease of use*. The vendor should focus on creating useful functions which could increase the *perceived usefulness* of SNS as a whole. The vendor could deploy the right *marketing mix* so that people at large notice and aware of the usefulness and functions of SNS as the user will feel good and more willing to use a particular SNS if he or she notices its usefulness.

The results of the study highlighted the importance of *intrinsic motivation* in user adoption of SNS. SNS vendors may consider integrating fun factor into their sites such as introducing entertainment rich functions which could be games, video sharing, creative contents, and so on which can keep the users happy. The vendor could strive to keep the users feeling good of their SNS as user is more willing to use a particular SNS if he feels good about it. With respect to perceived behavioural control, the vendor can add help functions and guidelines for user. In addition, tools that allow user to gain control on the appearance of user's profile display would be an attractive provision. Next, the users would be glad to have web pages that load quickly without the need to have high connection bandwidth. Last but not least, the vendor may consider providing free access to users continuously if possible. For researchers, the study supported the arguments from previous studies;

- Perceived usefulness played a critical role in work related environment only (Moon and Kim, 2001).
- Effect of social norm on intension is more significant in mandatory-usage context compared to voluntary usage context (Chun *et al.*, 2006).

By comparing the structural analysis results for IT and business students, we found that perceived enjoyment again appeared as the more dominant predictor on attitude compared to perceived usefulness for both groups, highlighting the importance of intrinsic motivation in the study. We also notice that the following arguments were in agreement when indicating that the IT students were lacking of experience in using SNS as discussed earlier.

- The more the user experienced, the lower the effect of PEOU to PU (Bailey and Pearson, 1983).
- Subjective norm has been found to be more important predictor for people with no prior experience and in early stages of system development (Taylor and Todd, 1995).

There are limitations in the study as the samples are taken from only one institution of higher learning in Malaysia. In addition, the data security factor was omitted in the study. Future studies may include data security factor as one of the antecedents for attitude.

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Appendix

Table II.
TAM applications

Research Application use	Core constructs and their definitions context	Studied application
Mathieson (1991) University Campus	PU PEOU Attitude Subjective norms Behavioral control Intention to use	Lotus 123
Davis et al.(1992) Workplace	PU PEOU Enjoyment Output quality Task importance Behavioral intention Usage behaviors	Word processing software Business graphics programs
Taylor and Todd (1995) University Campus	PU PEOU Compatibility Peer influence Superior's influence Self efficacy Resource facilitating conditions Technology facilitating conditions Attitudes Subjective norms Perceived behavioral control Behavioral intention Usage behaviors	University computing center
Venkatesh (2000) Workplace	PU PEOU Computer self-efficacy	Interactive online help desk system Multimedia system for

	Perception of external control Computer playfulness Computer anxiety Perceived enjoyment Subjective usability	property management Payroll system
Venkatesh and Davis (2000) Workplace	PU PEOU Subjective norm Voluntariness Image Job relevance Output quality Result demonstrability	Proprietary system Window-based system Customer account management system Financial system
Moon and Kim (2001) Internet	PU PEOU Perceived playfulness Attitudes Behavioral intention Usage behaviors	World wide web
Dabholkar and Bagozzi (2002) A context simulating	PU PEOU fast food restaurant Fun Consumer traits Situational influences	Touch screen ordering system
Venkatesh et al.(2003) manager	Performance expectancy: Workplace similar to PU in TAM Effort expectancy: similar to PEOU in TAM Social influence: similar to "Subjective norm" in TRA/TPB Facilitating conditions: similar to "Perceived behavior control" in TRA/TPB Mediating variables: gender, age, experience, and voluntariness of use.	Online meeting Database application Portfolio analyzer Proprietary accounting system

(Source: Adopted from Yen-Hao Howard Chen and David Corkindale (2008). "Towards an understanding of the behavioral intention to use online news services: An exploratory study". *Internet Research* Vol. 18 No. 3, 2008 pp. 286-312.)

Table XII.
Comparison of hypothesis testing results

	Description	General	IT students	Business students
H1	Perceived ease of use positively affects perceived usefulness of SNS.	Supported ($\beta = 0.78$)	Supported ($\beta = 0.82$)	Supported ($\beta = 0.69$)
H2	Perceived ease of use positively affects attitude towards SNS.	Not Supported	Not Supported	Not Supported
H3	Perceived usefulness positively affects attitude towards SNS.	Supported ($\beta = 0.40$)	Supported ($\beta = 0.43$)	Supported ($\beta = 0.38$)
H4	Perceived usefulness positively affects intention to use SNS.	Supported ($\beta = 0.39$)	Supported ($\beta = 0.29$)	Supported ($\beta = 0.37$)
H5	Perceived enjoyment positively affects attitude towards SNS.	Supported ($\beta = 0.56$)	Supported ($\beta = 0.57$)	Supported ($\beta = 0.55$)
H6	Attitude towards SNS positively affects intention to use SNS.	Supported ($\beta = 0.35$)	Supported ($\beta = 0.39$)	Supported ($\beta = 0.47$)
H7	Social Norm positively affects intention to use SNS.	Not Supported	Supported ($\beta = 0.16$)	Not Supported
H8	Perceived behavioural control positively affects intention to use SNS.	Supported ($\beta = 0.19$)	Not Supported	Supported ($\beta = 0.35$)
H9	Perceived behavioural control positively affects actual use of SNS.	Not Supported	Not Supported	Not Supported
H10	Intention to use SNS positively affects actual use of SNS.	Supported ($\beta = 0.57$)	Supported ($\beta = 0.57$)	Supported ($\beta = 0.88$)

Figure 3.
Structural model analysis (IT students; N=159)

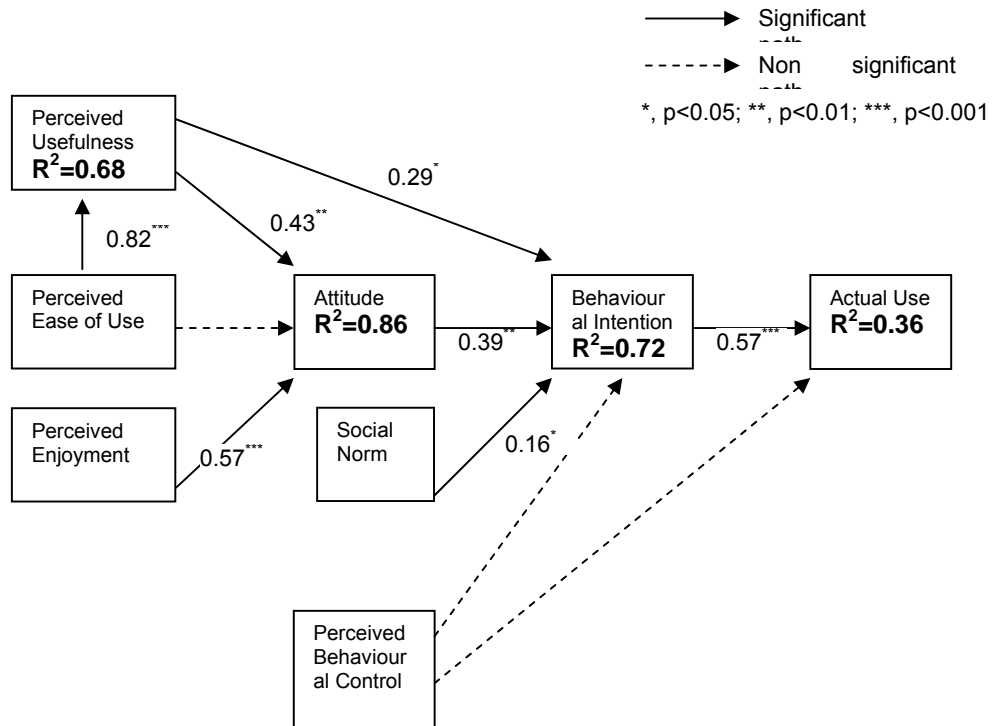


Figure 4.
Structural model analysis (business students; N=124)

