

SMS BANKING: EXPLAINING THE EFFECTS OF ATTITUDE, SOCIAL NORMS AND PERCEIVED SECURITY AND PRIVACY

Hanudin Amin

Labuan School of International Business and
Finance
Universiti Malaysia Sabah
hanudin_zu@yahoo.com

T. Ramayah

School of Management
Universiti Sains Malaysia
ramayah@usm.my

ABSTRACT

This study aims to investigate the factors influencing the use of short-messaging-service (SMS) banking among Malaysian bank customers. It focuses on the relationships among attitude, subjective norm, perceived security and privacy (PSP) and intention to use SMS banking. We collected 115 valid survey responses. The data indicate that attitude, subjective norm, and PSP are influential predictors of intention to use SMS banking. Corresponding discussion and implications are included.

Keywords

Attitude, Subjective Norm, Perceived Security and Privacy (PSP), Short-Messaging-Service (SMS) Banking

1. INTRODUCTION

Bank customers, nowadays, have a wide range of options to conduct banking transactions. One of the facilities of conducting a banking transaction, which is also easy to access, is SMS banking. Previously, SMS banking was only available at Bank Islam Malaysia Berhad (BIMB) but now this banking channel facility is available at most commercial banks in Malaysia. Recently, Bank Simpanan Nasional (BSN) offered SMS banking to its clients for the purpose of account balance query, bill payment and more. By definition, SMS banking is defined as a banking transaction through short messaging service (SMS) using mobile phone (Amin, 2007). Previously, SMS evolved among people as a key social memo to connect with family members, friends, and teachers. At present, SMS has evolved as a medium of disseminating banking information to make individual contact with banks better (Amin, 2007). SMS banking was first introduced in 2004 in Malaysia. Since then, SMS banking has become an interesting topic of research, not only in Malaysia but also in other countries (Mattila, 2003; Kleijnen et al., 2004; Laforet and Li, 2005). Technology acceptance model (TAM) was widely employed in these studies. These studies certainly have employed multiple regression models in eliciting respondent's perception with regard to SMS banking. These studies are indeed different in terms of employed independent variables in examining the association between the used antecedents and behavioral intention.

In view of the above, Mattila (2003) investigated the factors influencing one's decision to use mobile phone for banking transactions. Mattila (2003) discovered that "pay bills cheaper", "have faster data transmission rate" and "authenticate with mobile phone to Internet bank" were factors which made an individual use his/her mobile phone for banking transaction. On the other hand, in the study of Kleijnen et al. (2004) about wireless finance in Netherlands, perceived ease of use was a significant factor in the development of people's intention to use wireless finance. Laforet and Li's (2005) study, on the other angle found that respondents' level of education was found not to influence one's decision to employ mobile phone for banking transactions in China. Generally, these studies have produced mixed outcomes with regard to e-banking adoption and the study of intention to use SMS banking is

remained inconclusive. This has, in turn, provided room for the present study to explore further the importance of attitude, subjective norm, and PSP in determining intention to use SMS banking.

For the purpose, the present study attempts to examine the independent variables association with the dependent variable using multiple regression models. Choosing a multiple regression model is due to its appropriateness and convenience to test the relationship of the employed variables (Ramayah et al., 2003; Kleijnen et al., 2004). Moreover, the study results add more research information on SMS banking from Malaysian's perspectives. This research, indeed, provides fresh results of different kinds of approaches and viewpoints for SMS banking using survey research approach. Needless to say, this research provides up-to-the-minute insights into the antecedents which could explain SMS banking use.

2. THEORETICAL DEVELOPMENT

2.1 Attitude

In survey based research, the importance of attitude has been documented in many studies (Gopi and Ramayah, 2007; Ramayah and Suki, 2006; Ramayah et al., 2003). Specifically, attitude is meant as the evaluative effect of positive or negative feeling of individuals in performing a particular behavior (Fishbein and Ajzen, 1975). It is strongly asserted that, attitude and behavioral intention have significant relationship (Gopi and Ramayah, 2007; Amin, 2007; Ramayah and Suki, 2006; Nysveen et al., 2005; Ramayah et al., 2003). These studies indicated that attitude is an antecedent of behavioral intention.

Gopi and Ramayah (2007) examined online trading system from a Malaysian perspective and found that attitude and intention to use were significantly related. This means, an increase of attitude will also lead to an increase of intention to use for that particular system. Ramayah and Suki (2006) examined the use of mobile personal computer among graduate students and found that attitude had a significant relationship with intention to use. An interesting paper written by Ramayah et al. (2003) which also produced the same trend of result as what the first two studies did. Attitude had a positive relationship with intention to use internet banking among Malaysian bank customers. Further, Amin (2007) examined the factors affecting SMS banking use among young intellectuals in Malaysia. Further, both male and female respondents had positive attitudes for SMS banking use. In other words, attitude was significantly associated with SMS banking use among those students.

Amin (2007) replicated Nysveen et al.'s (2005) study in Norway. Stated differently, Nysveen et al. (2005) examined Norwegian from mobile chat services viewpoint and found that both male and female respondent rated attitude as an influential determinant to indicate their intention to use mobile chat services. Worth to mention, attitude had a fairly equal effect on intention to use. The attitude was measured on the basis of "good/bad", "wise/foolish", "favourable/unfavourable" and "positive/negative". This study finding is consistent to what was discovered by Amin (2007) in Malaysia.

It is strongly asserted that attitude dimension is perhaps can be extended to SMS banking in order to explain what factors can influence the use of SMS banking. Attitude in this present study's context includes a bank customer's perception on the basis of "good idea", "beneficial", "wise", "likeliness", "best practice" as well as "positive idea". Yuserrie et al. (2004) addressed the importance of the attitude dimension in explaining an individual's use of Islamic banking products in Pulau Pinang, Malaysia. In a similar setting of study, Lada et al. (2009) asserted that attitude had a significant influence on one's acceptance of halal products in restaurants in Labuan, Malaysia. Both of these studies agree that attitude can alter one's intention to do a desired action as the end of such intention.

On the basis of the above mentioned studies, the following hypothesis was proposed:

H₁: Attitude will positively influence intention to use SMS banking.

2.2 Subjective Norm

This study also attempts to understand the role of social influence to explain how this construct helps to justify one's decision to use SMS banking. Stated differently, this construct is also known as subjective norm as promoted by Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975). By definition, subjective norm can be defined as a person's perception that most people who are important to her or him should or should not perform the behavior in question (Fishbein and Ajzen, 1975).

Previous studies have explored the importance of such construct in social science studies including in banking studies (Amin et al. 2007; Nysveen et al., 2005; Kleijnen et al., 2004). Amin et al. (2007) alone found that subjective norm was a key predictor for mobile banking use from a Malaysian viewpoint. They conducted a study on the basis of convenience sampling. This effort is done owing to the fact that Bank and Financial Institutions Act (BAFIA) 1989 did not allow a researcher to acquire bank customers' information as well as the bank customers' population of any given banks. In a different setting of mobile use, Nysveen et al. (2005) examined mobile chatting usage in Norway, and found that subjective norm or subjective norm was found to be an important driver for mobile chatting usage among Norwegian. In supporting this, Nysveen et al. (2005) argued that users employed mobile chatting was due to the usage demonstrated their personal value as well as the influence of others on them. Similarly, in a study by Kleijnen et al. (2004) on wireless finance in Netherlands, subjective norm was essential in the development of peoples' intention to use wireless finance. It seems that people who surround an individual add value to the individual dealing with a bank. This, however provides an impact on consumer behavior which, on the other hand, impacting the use of wireless finance

In view of these studies, it is important to examine whether this construct is able to provide a clear direction as a key predictor for SMS banking use. Ideally, reference groups such as family members, friends, teachers, and bank tellers make a necessary force to encourage an individual to perform a behavior which consistent with their identities. This is promoted through the use of word-of-mouth (WOM), which is imparted when someone tells about positive things about his bank to other people (Ndubisi and Igau, 2003).

Using the findings of the above studies, we proposed the following hypothesis:

H₂: Subjective norm will positively influence intention to use SMS banking.

2.3 Perceived Security and Privacy (PSP)

This construct has been employed in several banking studies (Ndubisi and Sinti, 2006; Pikkarainen et al., 2004; Wang et al., 2003; Ramayah and Ling, 2002). The need to add this construct is owing to the two specific reasons. Firstly, there exists a hot issue relating to the "missing money" from a bank customer's saving account that has an Internet banking facility. As such, SMS banking also encounters with this particular issue, which leads to reluctance of SMS banking use. Secondly, there exists a strong assertion that, people still have a weak understanding of managing the use of e-banking facilities at the best conduct of practice (Pikkarainen et al., 2004; Roboff and Charles, 1998). This has on the other hand affected their account privacy as well as the security and tendency to be hacked by irresponsible parties. Essentially, this issue can also be found in the context of SMS banking. There is a

need, therefore to pay attention to the issue of PSP. PSP also refers to the perceived credibility of service/product provider (Wang et al., 2003). Many studies have noted why this construct is important. Of these, Ndubisi and Sinti (2006) examined internet banking perception among bank customers in Malaysia, and found that the risk was a weak predictor because of the assurance of the banks over the security of their internet banking. They upheld that all the cyber banks in Malaysia promote this product as a fully secure option with 128-bit encryption technology. Pikkarainen et al. (2004), similarly, examined internet banking, but from Finnish perspectives. They found that perceived credibility was found to be not significantly related to Internet banking acceptance.

Contrary to the above studies, Wang et al. (2004) who examined internet banking acceptance in Taiwan, found that PSP had a significant positive effect on behavioral intention of Internet banking. In a similar trend, Ramayah et al. (2006) examined users and non-users' perceptions of internet banking and found that security was a key predictor to measure internet banking use by users. The same work by Ramayah and his colleagues also asserted the importance of PSP in internet banking acceptance. For instance, Ramayah and Ling (2002) found that the respondents placed security as one of the important factors when adopting Internet banking. Generally speaking, bank customers have the tendency to simply avoid the use e-banking facilities if a bank disregards the need to provide proper measures to promote the PSP of Internet banking/SMS banking use. Owing to these studies, it is argued that people tend to utilize e-banking facilities when the bank management prioritizes the issue of PSP.

What is more, there exist several studies which have addressed the importance of PSP in their scope of researches (Chiu et al., 2005; Yang and Jun, 2002; Salisbury et al., 2001). Out of these studies, Chiu et al. (2005) has employed "personal awareness of security" in order to explain its relationship to attitude, which in turn impacting online purchase intentions among Taiwanese. Evidently, Chiu et al. (2005) found that the effects of personal awareness of security on online purchase intentions were purely through attitudes indirectly, implying that attitudes were the key consideration with respect to personal awareness of security. The importance of PSP is further documented by Salisbury et al. (2001) and Yang and Jun (2002) who revealed that security was the most critical concern influencing the attitudes of internet users. It seems that bank customers have placed a greater importance on PSP when employing e-banking facilities, which also tells us about their attitudes toward the use of the facilities. Speaking on attitudes, many bank customers are unwilling to give private information over the telephone or the internet owing to their inability to control their personal data once such data transferred to a third party (Pikkarainen et al, 2004).

H₃: Perceived security and privacy will positively influence intention to use SMS banking.

The tested hypotheses can also be presented through the following schema, which indicates the relationship between independent variables as well as the dependent variable. The model is of interest to present the effects of employed independent variables on intention to use SMS banking. The model is rooted in the TRA, which was first introduced, by Fishbein and Ajzen (1975).

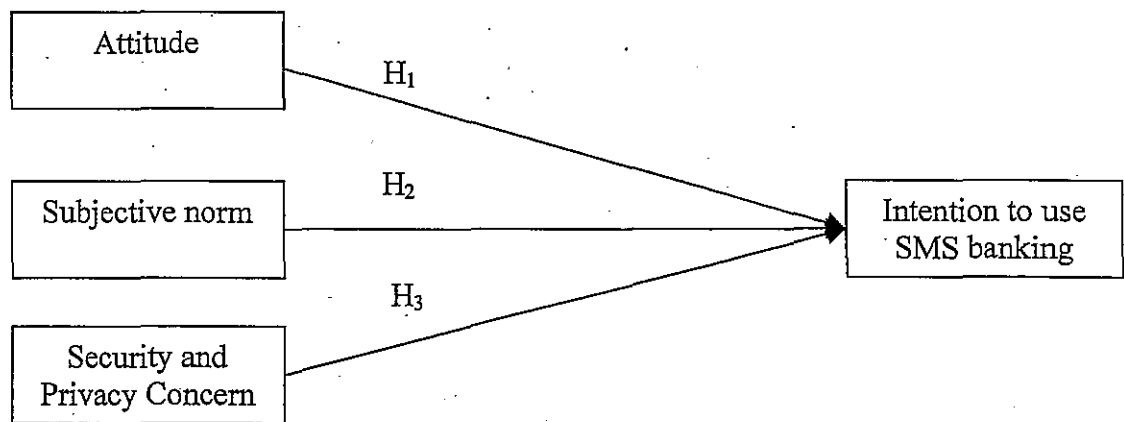


Figure 1: The Research Model

The study analyses the above relationships using the multiple regression model (MRM) to determine which variables are determinants of the bank customers' intention to use SMS banking. The study assumed the linearity of the phenomenon measured with constant variance and independence of the error terms. The normality of the error term distribution is also assumed. Thus, the following regression formula is examined:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad (1)$$

...where Y is the dependent variable of the respondents' perception of the "intention to use SMS banking"; X_1 , X_2 , and X_3 represent the independent variables ($X_1 = \textit{Attitude}$, $X_2 = \textit{Subjective norm}$, $X_3 = \textit{PSP}$), and e denotes the error terms.

3. RESEARCH METHODS

This study was conducted among bank customers in Malaysia who had a cell phone, and they were willing to use SMS banking in the future. Non-probability sampling was applied owing to the fact that BAFIA 1989 did not allow the disclosure of such information (Ramayah et al., 2006; Ramayah et al., 2003). In addition, commercial banks did not disclose such information since it has confidentiality value for the purpose of competitive advantage of any bank. The study results are rooted in bank customers' intention to SMS banking use which is derived from previous Theory of Reasoned Action (TRA).

A total of 200 questionnaires were provided for the actual fieldwork, however only 150 were distributed during the actual survey. Out of these feedbacks, only 115 questionnaires were found to be usable for the further analysis of the data. The sample size of the research is based on 115, which is a 77 percent response rate, which is considered satisfactory. Data of this study were analysed using Statistical Package of Social Science (SPSS) version 17. Choosing SPSS was due to its merit in the survey-based research, which received a wide range of empirical support from prior studies (Taib et al., 2008; Ramayah et al., 2006; Yuserrie et al., 2004; Ramayah et al., 2003).

In respect of the study measurements, the present study has made use of previous studies' inventories of questionnaire items. Attitude questionnaire items were based on Nysveen et al. (2005), while subjective norm questionnaire items were based on Yuserrie et al. (2004). Perceived credibility questionnaire items were adapted from Pikkarainen et al. (2004) Wang et al. (2003). This study employed a 5-point Likert scale to measure attitude,

subjective norm, PSP as well as SMS banking use. This scale has been used in previous survey related research (e.g. Ramayah et al., 2003).

A total of 15 questionnaires were distributed during the pilot test stage. It was done to reduce any ambiguities related to the research instrument. It was found that, most of the respondents seemed to understand what the research instrument elicited. Clear justification and presentation of the research instruments contributed to the better understanding. Only editing and some minor adjustments with regard to the format and setting of the questionnaire were done after the pilot test to make it more communicable, attractive, and readable. The demographic items are presented in Table 1.

Table 1: Profile of Respondents

Variable	Frequency	%
Gender		
Male	64	55.7
Female	51	44.3
Marital Status		
Single	59	51.3
Married	56	48.7
Education Level		
Certificate	15	13.0
Diploma	16	13.9
Bachelors degree	65	56.5
Masters	17	14.8
PhD	2	1.7
Religion		
Islam	63	54.8
Christian	26	22.6
Buddhist	24	20.9
Hindu	2	1.7

A total of 115 respondents responded to the survey questionnaires. Out of these respondents, a total of 64 respondents were males while the remainder 51 respondents were females. The questionnaires were almost equally distributed in terms of marital status. About 51.3 percent of the respondents were married while the rest of 48.7 percent were not married. As for education, it is found that most of the respondents were degree holders (56.5%). These respondents held various types of bachelor degrees. This is not an uncommon result as far as most Malaysians nowadays hold degrees in various disciplines of studies. In terms of religion, most of the respondents were *Muslims* with 54.8 percent of the total respondents. Hindu respondents, however, contributed a small figure to the sample size study, with 1.7 percent only. This is true since Islam is the official religion for Malaysia, in addition to other religions such as Christian, Buddha, and Hindu, which were also practiced by Malaysians.

4. HYPOTHESIS TESTING, RESULTS AND DISCUSSION

4.1 Factor Analysis and Cronbach's Alpha

This section provides the analysis and discussion of findings in order to satisfy the objectives of the study. More importantly, factor analysis was conducted prior to the regression analysis in order to identify the appropriate items for the analysis. Factor analysis is a data reduction technique that uses correlations between data variables. The underlying assumption of factor analysis is that a number of factors exist to explain the correlations or inter-relationships among observed variables (Chatfield and Collins, 1992). The study performed factor analysis

using a Principal Component Analysis (PCA) alongside with Varimax with Kaiser Normalization rotation method until the Eigen value of each factor was equal to 1 or more. According to Tabachnick and Fidell (1996), there are several methods of rotation used in a research-based study such as Quartimax, Direct Oblimin and Varimax rotation. Varimax rotation is most commonly used and it aims to maximize the variance of factor loadings by making a high loading higher and low ones lower for each factor (Shah et al., 2005).

Table 2: Factor Loadings

Measures	Factor loadings		
	Factor 1	Factor 2	Factor 3
1. My friends would think that I should use SMS banking	.853		
2.If I use SMS banking services most of the people who are important to me will regard it as valuable	.834		
3. If I use SMS banking services most of the people who are important to me will regard it as useful	.826		
4. Most people who are important to me think that I should engage in SMS banking	.795		
5. It is expected that people like me use SMS banking	.693		
6. SMS banking is good idea		.833	
7. I have positive perception on SMS banking		.784	
8. SMS banking is beneficial		.755	
9. SMS banking is wise		.663	
10. I like SMS banking		.629	
11. I am not worried about the security of SMS banking			.772
12. I trust SMS banking to protect my privacy			.743
13. I trust SMS banking as a bank			.740
14. Using SMS banking is financially secure			.723
15. Matters of security have no influence on using SMS banking			.684
Eigenvalue	7.819	2.090	1.271
Variance explained	52.126	13.934	8.473
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.824 (82%)	-	-
Bartlett's Test of Sphericity	Chi-square 1724.580 (df 105, <i>p</i> - value=.000)	-	-
Cronbach alpha (α)	.908(5)	.901 (5)	.888 (5)

In this study, the factor analysis was performed at two phases owing to the cross loaded items in the first phase. While, in the second phase, all variables were found to be located according to their group and there were no cross-loaded items. The tested items, the independent variables' items were reduced from 16 original items to 15 items as reported in Table 2. It is reported that factor 1 could be labeled as "*subjective norm*", factor 2 could be

labeled as “*attitude*” while the last factor could be labeled as “*PSP*”. The 11 items are further employed in order to perform reliability test, bivariate correlation, and multiple regression analysis.

The results for reliability test are presented in Table 2. According to Black (1999) “reliability is an indication of consistency between two measures of the same thing”. To comprehend the relationship between the two groups of data, it is necessary to quantify the reliability of the data. The reliability of the factors needs to be determined in order to support any measures of validity that may be employed (Nunnally, 1978). The employed items in this research were found to be reliable. All values ranged from 0.629 to 0.853. Explained in more detail, the results for the tested items were as follows: attitude 0.901 (5), subjective norm 0.908 (5), PSP 0.888 (5) and intention to use SMS banking .856 (6). Thus, all items were deemed reliable (Ramayah et al., 2003).

The Kaiser-Meyer-Olkin (KMO) measure for the combined items of the independent variables show a value of 0.824, indicating that the sampling adequacy was greater than 0.5 and therefore satisfactory. Bartlett's Test showed a χ^2 of 1724.580 with a significance level of 1 percent, where the total variance explained was 74.533 out of 3 components. On the other hand, KMO for the dependent variable depicts a value of .830 which tells us that the sampling was satisfactory. Bartlett's Test also found to be significant at 1 per cent significance level.

Table 3: Factor Loadings (the dependent variable)

Items of the Dependent Variable	Factor Loadings
I will use SMS banking for various types of banking transactions	.883
If I am using SMS banking now, I will continue to use it from time to time	.883
If I am using SMS banking now, I will increase the use of it in the future	.816
I will use SMS banking in the forthcoming month	.734
My general intention to use SMS banking is higher	.646
I will think about using SMS banking services	.600
Eigenvalue	3.539
Variance explained	58.988
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.830 (83%)
Bartlett's Test of Sphericity	Chi-square 335.086 (df 15, p -value=.000)
Cronbach alpha (α)	.856

4.2 Bivariate Correlations

The following tables present the mean, standard deviation and correlation of the study's variables. Table 4 presents mean and standard deviation whilst Table 5 presents the bivariate correlations of the independent and dependent variables.

Table 4: Descriptive Statistics

Variables	Mean	Std. Deviation	Sample
Intention to use	2.9580	.79221	115
PSP	2.3357	.88834	115
Attitude	3.4730	.91549	115
Subjective norm	2.9530	.82858	115

Table 5: Correlations

		Attitude	Subjective norm	PSP	Intention to use
Attitude	Pearson Correlation	1	0.598**	0.669**	0.682**
	Sig. (2-tailed)		.000	.000	.000
	N	115	115	115	115
Subjective norm	Pearson Correlation	0.598**	1	0.494**	0.628**
	Sig. (2-tailed)	.000		.000	.000
	N	115	115	115	115
PSP	Pearson Correlation	0.669**	0.494**	1	0.700**
	Sig. (2-tailed)	.000	.000		.000
	N	115	115	115	115
Intention to use	Pearson Correlation	0.682**	0.628**	0.700**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	115	115	115	115

Note: * $p < 0.05$; ** $p < 0.01$, ^{ns} not significant

As shown in Table 5, it is reported that all of the independent variables were positively related to intention to use. PSP was positively related to intention to use at 0.01 significance level ($r=.700$). Similarly, attitude was positively related to intention to use at 0.01 significance level ($r=.682$). In addition, subjective norm was positively related to intention to use at the 0.01 significance level ($r=.628$). Taken as a whole, when the independent variables are increased, the dependent variable is also increased positively.

In a similar vein, prior to multiple regression, the data were assessed for multicollinearity. As reported in Table 5, the correlation results indicated that a number of significant intercorrelations among the independent variables existed. As none of these intercorrelations exceeded .80 the likelihood of multicollinearity was relatively low as shown in Table 5. Hence, the independent variables can be further utilized for multiple regression analysis.

4.3 Multiple Regression Analysis

Considering the outcome from the factor analysis, the items for independent variables and the dependent variable were aggregated in which factor loadings exceeded .60 were selected. Once the data were aggregated, the multiple regression was conducted to reveal how different factors affect intention to use SMS banking. This approach has been widely employed in the survey – based studies (Guriting and Ndubisi, 2006; Luarn and Lin, 2005; Kleijnen *et al.*, 2004; Wang *et al.*, 2003 and Ramayah *et al.*, 2003). Aggregation of the research results allows combining of all items under one particular heading or label, which thus is easy to analyze using regression analyses, as noted earlier

Table 6: Multiple Regression Analysis

Variable	Standardized β	t-value	p-value
Attitude	.249	2.897	.005**
Subjective norm	.286	3.880	.000**
PSP	.392	4.939	.000**
F-value	81.304 (.000)		
R square	.624		
Adjusted R square	.613		

Note: * $p < 0.05$; ** $p < 0.01$, ^{ns} not significant

As depicted in Table 6, attitude was found to have a significant effect on intention to use SMS ($t=2.897$, $p\text{-value}=0.005$) at 1 percent significance level. These outcomes are consistent with previous studies of Gopi and Ramayah (2007), Ramayah and Suki (2006) and Ramayah et al. (2003). It is concluded that the more positive attitude, the more likely that SMS banking to be used by bank customers. Subjective norm was also found to have a significant effect on intention to use SMS banking ($t=3.880$, $p\text{-value}=0.000$) at 1 percent significance level. These outcomes are parallel with previous studies of Nysveen et al. (2005) and Kleijnen et al. (2004). This simply means that the greater subjective norm, the more likely intention to use SMS banking in the future by bank customers. Consequently, null hypotheses for $H1$ and $H2$ are confirmed, and it is asserted that attitude and subjective norm have strong influence over the behavioral intention to use SMS banking.

PSP was found to have a significant effect on intention to use SMS ($t=4.939$, $p\text{-value}=0.000$) at 1 percent significance level. The result concurs with the findings of Luarn and Lin (2005) and Wang et al. (2003) where PSP were affecting the utilization of mobile banking. Wang et al. (2003) found out that perceived credibility had a significant positive effect on behavioral intention over internet banking. In a similar trend, the result of the present study also lends a support to the finding of Ramayah et al. (2006) who found out that security was a key factor to evaluate Internet banking use by users and non users of the particular banking channel. This means, the more positive PSP, the more likely intention to use SMS banking.

Table 6 also reports the R^2 . The R^2 was 0.624 indicating that 62.4% of the variation in intention to use SMS banking could be explained by the three independent variables and the F-value of 81.304 was significant at 0.01 significance level

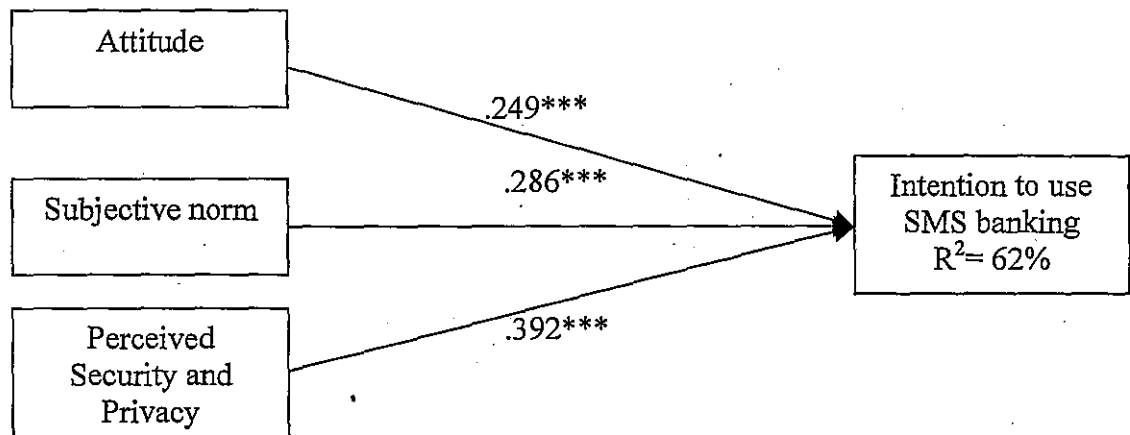
Besides bivariate correlation, the study also employed tolerance and variance inflation factor (VIF) values to estimate the multicollinearity problem. Results of the study reveal no multicollinearity problem for attitude, subjective norm, and PSP since these variables were significant. The tolerance values for the variables are greater than 0.1, which means the results raise no multicollinearity problem. On the other hand, the VIF values are greater than 10 shows collinearity existed (see Table 7). In the current research model, the VIF values were all below 10 and the tolerance values were all above 0.1, which could be concluded that there was no collinearity with the data of the study.

Table 7: Collinearity Statistics

Variables	Tolerance	VIF
Attitude	.457	2.187
Subjective norm	.626	1.597
PSP	.539	1.855

5. CONCLUSIONS AND PRACTICAL IMPLICATIONS

This study has succeeded to review the impact of attitude, subjective norm, and PSP on intention to use SMS banking. It is found that attitude, and subjective norm were significantly associated with intention to use SMS banking. These results substantiated Fishbein and Ajzen (1975)'s theory, where attitude and subjective norm were the key predictors determining one's intention to use a particular system. The results, also, notify us that PSP was an influential predictor to determine intention to use SMS banking.



Note: * $p < 0.05$; ** $p < 0.01$, ^{ns} not significant

Figure 2: The Analysed Research Model

The results of this study lead to several policy implications for different parties of interest, as explained below.

First, on the banking management's side, it is highly recommended to a bank to practice a detailed measure of PSP for SMS banking. Communicating the importance of security and privacy of SMS banking services is therefore important to protect bank customers' personal information and money. As proven in the study results, PSP was one of the key factors to determine a bank customer's intention to use SMS banking. Of the three tested independent variables, PSP was the strongest, followed by subjective norm and attitude. Owing to this evidence, it is of utmost importance for bank management to give greater emphasis on the issue of PSP in SMS banking transactions. It is hence important for the bank management to share information, which tells the customers about the greater measure employed to secure the use of SMS banking. To confront this, there are three fine recommendations which could be taken into consideration by the bank management when offering SMS banking: (1) it is commendable for the bank management to come up with an idea to setup a specific room not only for the demonstration of SMS banking but also for other e-banking facilities. This effort provides the greater benefit for the management since it elevates the customer base for the bank in the future, which in turn impacting the profitability and the corporate image of the bank. (2) The Internet banking of the respective banking institutions should provide clear information regarding the use of SMS banking. That information should tell to the customers on the systematic guidance, which facilitates them to use SMS banking. Easy printed material regarding the guidance of SMS banking use should be made available and ready to download in the bank's respective website. (3) Updating bank officers' information regarding SMS banking use is of interest to further enhance the quality of SMS banking service delivery to bank customers. In this case, the officers play the role of persuading and convincing customers that SMS banking is safe and secure to use, which can

also provide greater understanding about the use of SMS banking. These efforts are able to promote the privacy and security of SMS banking, thus impacting SMS banking use.

Secondly, considering the subjective norm, the authors recommend two things here. These recommendations are in consonance with the abovementioned. Firstly, bank officers play the importance role in attracting bank customers to use SMS banking. Information about SMS banking should be provided by bank tellers and bank assistants at branches level. This means, they communicate the advantages, the securities, the services provided by the banking type to the customers, which in turn is able to affect the customers' decision to use SMS banking. The officers also need to recommend the well-informed customers to influence their family members and friends to use SMS banking. These circles are able to create a good atmosphere to affect the use of SMS banking from one to another.

Thirdly, then how to tackle one's attitude regarding the use of SMS banking? Letting the customers to learn and to practice the SMS banking services at their own initiatives would not be sufficient to elevate the usage of SMS banking. There is a need, therefore, to have well-versed bank officers (e.g. specifically hired for the SMS banking services and other e-banking offerings) who will communicate and guide the bank customers about the SMS banking services. The officers should provide instructions on how to use SMS banking services safely. Specifically, providing the customers demonstrations in public places (e.g. bank branches and shopping malls) may also provide a means to generate a better use of SMS banking. The attitude of bank customers can be enhanced through these efforts, which generally change their attitudes in better forms. These efforts, although, deviating from the main objective of commercial banks to maximize profits, however, they give ways to increase the awareness of bank customers to use the SMS banking services, which in turn also affect the usage of other banking facilities and products in the long-run.

Fourthly, on the prospective researcher's side, the outputs of the present study are of interest to provide direct directions for the debate of the effects of the attitude, subjective norm, and PSP on intention to use SMS banking. This means the present research results provide a point of departure for the future research.

This research is not free from any shortcomings although it has been succeeded to gratify the research objectives. In this present study, the limitations are confined to three only. Firstly, the present study used only several measures. There is a need, therefore, for future research to further plan to add more measures, and of these, adding external variables such as experience and religiosity would be interesting to figure out. Secondly, only SMS banking subject was considered for the present study. It is likely important to conduct an additional research in different banking subjects such as internet banking, ATM banking, and mobile internet banking is required to evaluate the generalizability of the research findings. These issues should be considered for the future research. Besides these limitations, the present study generally focused on bank customers in Labuan, an International Business Financial Center (IBFC) in which the results of the study can only generalised in the context of Labuan. To counter this, further research could expand the survey to Malaysian people in other provinces rather than being specific to Labuan only and should be conducted at regular intervals to observe the impact of changes. Even so, these limitations open a wide spectrum of research opportunities in the area of e-banking from a Malaysia point of view.

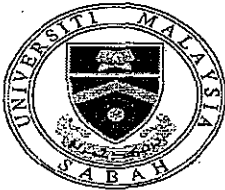
6. REFERENCES

- Amin, H. (2007) Extending TAM To SMS Banking: Analyzing The Gender Gap Among Students, *International Journal of Business and Society*, 8, 1, 24-45.
- Amin, H., Baba, R. and Muhammad, M.Z. (2007) An Analysis Of Mobile Banking Acceptance By Malaysian Customers, *Sunway Academic Journal*, 4, 1-12.

- Black, T.R. (1999) *Doing Quantitative Research in the Social Sciences – An Integrated Approach to the Research Design: Measurement and Statistics*, Sage Publications, London.
- Chatfield, C. and Collins, A.J. (1992) *Introduction to Multivariate Analysis*, Chapman & Hall, London.
- Chiu, Y.B., Lin, C.P. and Tang, L.L. (2005) Gender Differs: Assessing a Model of Online Purchase Intentions in E-Tail Service, *International Journal of Service Industry Management*, **16**, 416-435.
- Fishbein, M. and Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*, Addison-Wesley: Reading, MA.
- Gopi, M. and Ramayah, T. (2007) Applicability Of Theory Of Planned Behavior In Predicting Intention To Trade Online: Some Evidence From A Developing Country, *International Journal of Emerging Markets*, **2**, 4, 348-360.
- Kleijnen, M., Wetzels, M. and de Ruyter, K. (2004) Consumer Acceptance Of Wireless Finance, *Journal of Financial Services Marketing*, **8**, 206-217.
- Lada, S., Tanakinjal, G.H. and Amin, H. (2009) Predicting Intention To Choose Halal Products Using Theory Of Reasoned Action, *International Journal of Islamic and Middle Eastern Finance and Management*, **2**, 1, 66-76.
- Laforet, S. and Li, X. (2005) Consumers' Attitudes Towards Online And Mobile Banking In China, *International Journal of Bank Marketing*, **23**, 362-380.
- Luarn, P. and Lin, H.H. (2005) Toward An Understanding Of The Behavioural Intention To Use Mobile Banking, *Computers in Human Behaviour*, **21**, 873-891.
- Mattila, M. (2003) Factors Affecting The Adoption Of Mobile Banking Services, *Journal of Internet Banking and Commerce*, **8**. <http://www.arraydev.com/commerce/JIBC/0306-04.htm>.
- Ndubisi, N.O. and Igau, O.A. (2003) Can WOM Communication, Patronage Intention And Complaining Behaviour, Predict Customer Retention And Loyalty, *Labuan Bulletin of International Business and Finance*, **1**, 1, 41-51.
- Ndubisi, N.O. and Sinti, Q. (2006) Consumer Attitudes, System's Characteristics And Internet Banking Adoption In Malaysia, *Management Research News*, **29**, 1/2, 16-27.
- Nunnally, J.C. (1978) *Psychometric Theory*, McGraw-Hill, New York.
- Nysveen, H., Pedersen, P.E. and Thorbjornsen, H. (2005) Explaining Intention To Use Mobile Chat Services: Moderating Effects Of Gender, *Journal of Consumer Marketing*, **33**, 5, 247-256.
- Pikkarainen, T., Pikkarainen K., Karjaluoto, H. and Pahnla S. (2004) Consumer Acceptance Of Online Banking: An Extension Of The Technology Acceptance Model, *Internet Research*, **14**, 3, 224-235.
- Ramayah T, Jantan, M., Noor M.N.M. and Ling, K.P. (2003) Receptiveness Of Internet Banking By Malaysian Consumers, *Asian Academy of Management Journal*, **8**, 2, 1-29.
- Ramayah T, Taib, F. M. and Ling, K.P. (2006) Classifying Users And Non-Users Of Internet Banking In Northern Malaysia, *Journal of Internet Banking and Commerce*, **11**, 2. <http://www.arraydev.com/commerce/JIBC/0306-04.htm>.
- Ramayah T. and Ling, K.P. (2002) An Exploratory Study of Internet Banking in Malaysia. *Proceedings of the 3rd International Conference on Management of Innovation and Technology*, 25-27 October 2002, China.
- Ramayah, T. and Suki, N.M. (2006) Intention To Use Mobile PC Among MBA Students: Implications For Technology Integration In The Learning Curriculum, *UNITAR e-Journal*, **1**, 2, 1-10.

- Roboff, G. and Charles, C. (1998) Privacy Of Financial Information In Cyberspace: Banks Addressing What Consumers Want, *Journal of Retail Banking Services*, 20, 3, 51-56.
- Salisbury, W.D., Pearson, R.A., Pearson, A.W. and Miller, D.W. (2001) Perceived Security And World Wide Web Purchase Intention, *Industrial Management & Data Systems*, 101 3/4, 165-76.
- Shah, M. H., Khan, S. and Xu, M. (2005) A Survey of Critical Success Factors in E-Banking, *European, Mediterranean & Middle Eastern Conference on Information Systems*, 7-8 June, Cairo Egypt.
- Tabachnick, B.G and Fidell, L.S. (1996) *Using Multivariate Statistics, 3rd Ed*, New York: Harper Collins Publisher.
- Taib, F.M., Ramayah, T. and Razak, D.A. (2008) Factor Influencing Intention To Use Diminishing Partnership Home Financing, *International Journal of Islamic and Middle Eastern Finance and Management*, 1, 3, 235-248.
- Wang, Y.S., Wang, Y.M., Lin, H.H. and Tang, T.I.(2003) Determinants Of User Acceptance Of Internet Banking: An Empirical Study, *International Journal of Service Industry Management*, 14, 5, 501-519.
- Yang, Z. and Jun, M. (2002) Consumer Perception Of E-Service Quality: From Internet Purchaser And Non-Purchaser Perspectives, *Journal of Business Strategies*, 19, 1, 19-41.
- Yuserrie, Z., Noresma, J. and Ramayah, T. (2004) Perception Of Islamic Banking: Does It Differ Among Users And Non Users, *Jurnal Manajemen dan Bisnis*, 6, 2, 135-149.

APPENDIX A: SAMPLE OF QUESTIONNAIRE



Universiti Malaysia Sabah

LSIBF

Good morning/afternoon/evening.

I am a researcher from the Universiti Malaysia Sabah (UMS), would like to ask your willingness to participate in this survey work. Your participation is considered voluntary in this research.

For your information, this research is aimed to gauge your perception of SMS banking with respect to determinants of use. Owing to this objective, you are selected as one of the respondents in the survey. Your participation in the survey is highly appreciated. Your information is used for the survey purpose only and to be treated as confidential.

Part 1 : Perception of SMS banking

Please indicate your level agreement for the following research items based on the following scales.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
1	2	3	4	5	
<i>How do you rate your attitude in consonance with the following items?</i>					
1SMS banking is good idea	1	2	3	4	5
2SMS banking is beneficial	1	2	3	4	5
3SMS banking is wise	1	2	3	4	5
4 I like SMS banking	1	2	3	4	5
5SMS banking is the best banking channel	1	2	3	4	5
6 I have positive perception on SMS banking	1	2	3	4	5
<i>How do you rate your perception in consonance with the following items?</i>					
7Most people who are important to me think that I should engage in SMS banking	1	2	3	4	5
8It is expected that people like me use SMS banking	1	2	3	4	5
9My friends would think that I should use SMS banking	1	2	3	4	5
10If I use SMS banking services most of the people who are important to me will regard it as useful	1	2	3	4	5
11If I use SMS banking services most of the people who are important to me will regard it as valuable	1	2	3	4	5
<i>How do you rate your perception in consonance with the following items?</i>					
12Using SMS banking is financially secure	1	2	3	4	5
13I trust SMS banking to protect my privacy	1	2	3	4	5
14I trust in SMS banking as a bank	1	2	3	4	5
15I am not worried about the security of SMS banking	1	2	3	4	5
16Matters of security have no influence on using SMS banking	1	2	3	4	5
<i>How do you rate your intention in consonance with the following items?</i>					
17My general intention to use SMS banking is higher	1	2	3	4	5
18I will think about using SMS banking services	1	2	3	4	5
19I will use SMS banking in the forthcoming month	1	2	3	4	5
20If I am using SMS banking now, I will increase the use of it in the future	1	2	3	4	5
21I will use SMS banking for various types of banking transactions	1	2	3	4	5
22If I am using SMS banking now, I will continue to use it from time to time	1	2	3	4	5

Part 2: Respondent's particulars

Gender	a. Male	b. Female			
Marital status	a. Single	b. Married			
Education attained	a. Certificate qualifications	b. Diploma	c. Bachelor	d. Master	e. Ph.D
Religion	a. Islam	b. Christian	c. Buddhist	d. Hindu	e. Others. Specify:

