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RECEPTIVENESS OF MOBILE BANKING BY MALAYSIAN LOCAL CUSTOMERS IN SABAH: AN EMPIRICAL INVESTIGATION

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Abstract

The aim of this study is to investigate the factors that determine the local people of Sabah (also known as *Sabahan*) bank customers' intention to use mobile banking. This study extends the applicability of the Technology Acceptance Model (TAM) to mobile banking and includes "perceived credibility", "perceived enjoyment" and "perceived self-efficacy", in addition to "perceived usefulness" and "perceived ease of use". The results indicate that perceived credibility, perceived enjoyment and perceived self-efficacy are important determinants to predicting the intentions of Malaysia's customers' to use mobile banking. However, perceived usefulness and perceived ease of use are not that of importance in predicting the intentions of the local customers to use mobile banking. The study contains a sample of local people of Sabah, in Eastern-Malaysia, and a limited number of measures in the model. Nonetheless, it provides new insight into factors affecting mobile banking use among local people in Sabah, a Malaysia's state. The results also provide general guidelines to banking institutions to better planning of mobile banking services as their future gadget of banking channel.

Keywords: Mobile banking; Consumer; Technology acceptance model; Financial transactions; Eastern-Malaysia; Malaysia

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INTRODUCTION

Sabah is best known as "*the land below the wind*". It is one of the wonderful states in Malaysia. The state is blessed with amazingly beautiful landscapes, cultural diversities and natural resources. Kota Kinabalu is the capital city of the state that houses diverse banking and financial institutions. Customers of banks in the city play a major role in

performing a various types of financial activities. The bank customers in Sabah were composed of Kadazandusun, Bajau, Murut, Bisaya, Ubian, Kedayan, Rungus and Suluk, to mention some. Needless to say, the local people of Sabah are easily recognized mainly through their slangs. For instance, *bagus bah Bank Islam tu! Siya orang Malaysia bah!* The slang “bah” reflects the local people identity (*Sabahan*) in Malaysia.

On that basis, the current study is aimed at investigating factors that affecting these local people using mobile banking services. The reasons of choosing the local people are two-fold. Firstly, there is a paucity of studies that have adequately explained the effects of mobile banking use to the *Sabahan* (Guriting & Ndubisi, 2006; Ndubisi & Sinti, 2006). Secondly, the local people involved in various monthly financial commitments such as utility bill payment, home loan, ASTRO (Malaysian direct broadcast satellite), fund transfer and prepaid. Traditional mode of payment requires local people to visit banks/non-bank financial institutions to service these financial commitments and it is relatively time-consuming. The use of mobile banking would of particular interest to tackle this situation.

Importantly, using mobile banking will help to improve one’s access to banking transactions without walking to the bank’s counter. In this study, we generally defined mobile banking as a “*banking-technology*” used to conduct banking transactions via bank customers’ handheld mobile phones. It is proven by previous studies that, mobile banking offers many advantages to bank customers (e.g. Hamzah, 2005; Riivari, 2005; Kohli, 2004). Hamzah (2005) said that “mobile banking” brings convenience and enhanced value. Riivari (2005) claimed that the opportunity for mobile services is three times as many mobile phone users as those who use online Personal Computers (PCs) and they are now ready for anywhere, anytime applications that match their lifestyles. On the same note, Kohli (2004) asserted that the mobile banking service gives customers the convenience of account access information and real-time transaction capabilities. The clarifications rendered by these studies imply that mobile banking is not only improves one’s access to financial transactions but also reducing one’s transaction costs (e.g. time and money).

The present study investigates the factors affecting bank customer’s use of mobile banking in Sabah. Deliberately, the technology acceptance model (TAM) was used as a point of departure to explore the factors affecting bank customers’ use of mobile banking. This study extends the applicability of TAM into mobile banking, which has limited to study in Sabah, Malaysia. The original elements of TAM notably perceived ease of use and perceived usefulness are found to be the most important constructs in predicting information systems (IS) acceptance. These two constructs are useful and valid in understanding individual’s intention to adopt IS (Ramayah & Mohd-Suki, 2006; Guriting & Ndubisi, 2006; Pikkariainen et al., 2004; Ramayah et al., 2003; Venkatesh & Morris, 2000). However, depending on the specific technology context, additional explanatory predictors are often employed. As such, perceived enjoyment, perceived credibility and perceived self-efficacy are added to the TAM in order to escalate the understanding of bank customers’ use of mobile banking. Worth to mention, this study indeed is beneficial by providing an analysis of bank customers’ mobile banking acceptance to researchers and practitioners. This study is of value to notify public about the availability of mobile banking in local banks.

The paper is structured into 5 sections. The following section is section 2 that presents about literature review, followed by section 3 that discusses about the methodology. Section 4 will present the results of study includes hypotheses testing and discussion of results. Finally, this paper closes with a conclusion that can be viewed at the end part of this paper.

LITERATURE REVIEW

Concerned with TAM, an investigation on previous studies had been conducted in order to reveal the TAM applicability in various IS applications. The following discussion provides an overview of the previous studies relevant to the current study.

Perceived usefulness

The first element of TAM was perceived usefulness. Guriting and Ndubisi (2006) examined online banking adoption in Sabah. Guriting and Ndubisi (2006) found that perceived usefulness was a strong determinant of online banking adoption among bank customers. Similarly, a study by Ramayah and Mohd-Suki (2006) on mobile PC also found that perceived usefulness was a strong determinant of mobile PC adoption among MBA students at Universiti Sains Malaysia (USM). Another study by Ramayah and colleagues, Ramayah et al. (2003) examined the receptiveness of Internet banking by Malaysian consumers. The result of their study indicated that perceived usefulness was the driver of the intention to use Internet banking, which means if the system is useful, therefore the willingness of bank customers to use the system will be likely higher. Consequently, with a good value carries by a mobile phone, the inclusion of banking function will able to enhance the value carries by the gadget. In a normal situation, mobile phone is useful with respect to make our contact with the loved ones better through sharing feeling and emotion. This also explains that the banks contact with their customers would be better by offering banking services through their customers' mobile phones.

Perceived ease of use

The second element of TAM was perceived ease of use. It is defined as how clear and understandable interaction with the system is, ease of getting the system to do what is required, mental effort required to interact with the system, and ease of use of the system (Guriting & Ndubisi, 2006; Davis et al., 1989). In more detail, Guriting and Ndubisi (2006) found that perceived ease of use had a positive relationship with behavioral intention to use Internet banking in Sabah. Similarly, Ramayah et al. (2003) examined that perceived ease of use had significant impact in the development of initial willingness to use Internet banking. Furthermore, Luarn and Lin (2005) also found that there existed a positive causality between perceived ease of use and usage intention. Similarly, in a study of Kleijnen et al. (2004) about wireless finance in Netherlands, perceived ease of use was significant measure in the development of people's intention to use wireless finance.

Perceived credibility

The issue of security and privacy to the acceptance of Internet banking has been noted in many banking studies (Pikkarainen et al., 2004; Wang et al., 2003; Howcroft et al., 2002; Polatoglu & Ekin, 2001; Sathye, 1999). Perceived credibility refers to the two important dimensions – security and privacy – that are identified across many studies as

effecting intention by users to adopt the Internet-based transaction systems (Wang et al., 2003). Wang et al. (2003) examined about Internet banking found that perceived credibility had a significant positive effect on behavioral intention over Internet banking. The study also strongly suggests that perceived credibility has the higher ability to predict and explain the intention of users to adopt Internet banking. Ramayah et al. (2003) found that the respondents placed security as one of the important factors when adopting Internet banking. Fundamentally, most of the individuals are reluctant to use Internet banking as they have concerns over the security and privacy issues. However, a study by Pikkarainen et al. (2004) showed contradicts result. Their study showed that perceived credibility to be statistically non-significant. In that sense, security and privacy were found to have a relatively weak relationship with the acceptance. The result is consistent with the study conducted in Malaysia by Ndubisi and Sinti (2006) who found that the risk was a weak predictor because of the assurance of the banks over the security of their internet banking. All the cyber banks in Malaysia promote this product as a fully secure option with 128-bit encryption technology (Ndubisi & Sinti, 2006). The inclusion of "perceived credibility" is still relevant owing to the fact that mobile banking is subject to the unauthorized access, phantom fund transfers and data sabotage. Understanding consumers' perception with regard to the credibility of utilizing the system is able to provide key points to service providers for better planning of the mobile banking facilities.

Perceived enjoyment

Perceived enjoyment is defined as the extent to which the activity of using a computer is perceived to be enjoyable in its own right (Davis et al., 1992). A number of studies on perceived enjoyment have noticed the importance of the construct (Nysveen et al., 2005; Pikkarainen et al., 2004; Teo et al., 1999). Explained in more detail, Nysveen et al. (2005) found that perceived enjoyment correlated positively with intention to use mobile chat, which was a stronger determinant for female users compared to male users. The result reported by Nysveen et al. (2005) is similar to what was found by Teo et al. (1999). Teo et al. (1999) found that perceived enjoyment correlated positively with frequency of Internet usage. Teo et al. (1999) definitely believed that Internet usage offers fun, pleasant and exciting since it is flexible. On the other hand, Pikkarainen et al. (2004) examined online banking acceptance and found that perceived enjoyment was not significantly related to the use of Internet banking. In a similar vein, Igbaria et al. (1995) found that enjoyment had no statistically significant effect on the acceptance of data processing systems. It is expected that using mobile banking would generate an enjoyment to bank customers. On this basis, it is expected that perceived enjoyment would be affecting the acceptance of mobile banking.

Perceived self-efficacy

By definition, perceived self-efficacy refers as the belief that one has the capability to perform a particular behavior (Compeau & Higgins, 1995). The importance of this construct in IS has been well documented by many previous academic studies (Luarn & Lin, 2005; Wang et al., 2003; Agarwal et al., 2000; Venkatesh, 2000). As far as mobile banking is concerned, perceived self-efficacy can be defined as the judgment of one's ability to use mobile banking. Indeed, there is empirical support for the causal relationship between perceived self-efficacy and behavioral intention (Agarwal et al., 2000; Venkatesh, 2000; Compeau & Higgins, 1995). Luarn and Lin (2005) found that perceived self-efficacy had a significant positive influence on behavioral intention to use

IS. A study conducted by Wang et al. (2003) found that computer self-efficacy had significant positive influence on behavioral intention. Bank customers are likely to adopt mobile banking when they have ability to perform it. Perceived self-efficacy can be improved in oneself if an education program, seminar, and even short-course are organized to instill the skills and knowledge of individuals pertaining to mobile banking. It is of interest to examine the effect of the factor on the mobile banking use among the local people of Sabah, Malaysia. The results of this effort are expected to add to the limited knowledge presently available about mobile banking particularly from a Sabah's context.

RESEARCH METHODS

Samples

This study was conducted in Sabah, situated in Northern Borneo, Malaysia. The population of this study consists of bank customers in Kota Kinabalu, Sabah, Malaysia. The respondents were customers of banks in Kota Kinabalu who had mobile phones but yet to use mobile banking. For this reason, this study tends to investigate their willingness to use mobile banking in the future based on suggested factors as introduced in the earlier part of this paper. The unit of analysis was the local people of Sabah or is best known as *Sabahan*. Other respondents such as Malays, Chinese, Indians, and foreigners are not analyzed in the current study. This research used a convenience sampling owing to the fact that it is particularly was self-funded. The survey was conducted in March 2007. This study provided 200 questionnaires to be distributed, however due to the time and cost constraint only 160 were managed to be distributed. Of these, only 152 questionnaires were usable and qualify for the further analysis of the data. There is 95 percent response rate. Table 1 depicts the profile of respondents with regard to gender, age, education level, monthly income and ethnicity.

Table 1: Profile of respondents

Demographics	Details	Frequency	Percentile
Gender	Male	54	35.5
	Female	98	34.5
Age (year)	Less than 20	3	2.0
	21-25	58	38.2
	26-30	26	17.1
	31-35	23	15.1
	36-40	14	9.2
	Above 41	27	17.8
Education level	Secondary	49	32.3
	Diploma	12	7.9
	Degree (bachelor)	69	45.4
	Postgraduate degree	22	14.5
Monthly income (RM)	Less than 1,000	63	41.4
	1,001-2,500	44	61.3
	2,501-3,000	20	13.2
	3,001-3,500	24	15.8
	Above 3,500	20	13.2
Ethnicity	Kadazan-Dusun	40	26.3

Bajau	32	21.1
Murut	12	7.9
Rungus	21	13.8
Bisaya	10	6.6
Kedayan	18	11.8
Suluk	8	5.3
Others	11	7.2

Measures

The items of the questionnaire were adapted from previous studies. The scale used in this study which 5 points likert scale is similar to what was used by Pikkarainen et al. (2004). Therefore, as a basis of questions, 5 points likert scale ranging from “5=strongly agree” to “1=strongly disagree” were employed. The items for perceived usefulness were adapted from Ramayah et al. (2009) and Pikkarainen et al. (2004). The items for perceived ease of use were adapted from Ramayah et al. (2009), Pikkarainen et al. (2004) and Davis (1989). The items for perceived credibility were adapted from Luarn and Lin (2005). The items for perceived enjoyment were adapted from Pikkarainen et al. (2004). The items for perceived self-efficacy were adapted from Luarn and Lin (2005). Prior to the actual survey, the questionnaire was pre-tested using 10 bank customer subjects in Kota Kinabalu. The purpose of the test was to prevent any ambiguousness in the items of the questionnaire as well as to evaluate respondents’ comprehension. Further, the results of the study were then used in order to modify and finalize the research questionnaire.

Research model and hypotheses

The following model is extracted from Davis et al. (1989). Additional constructs namely perceived credibility, perceived enjoyment and perceived self-efficacy are added into the model:

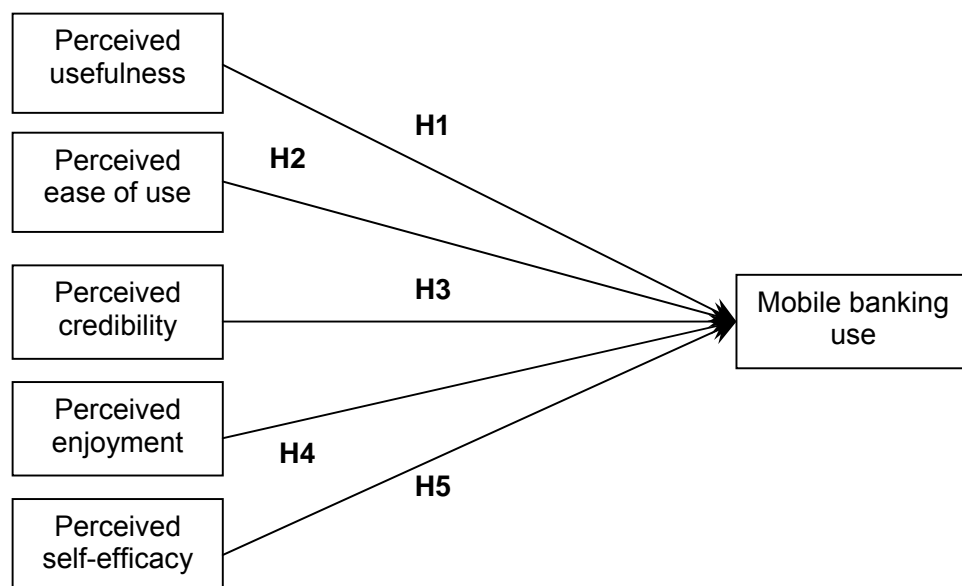


Figure 1: Modified model for mobile banking

Based on Figure 1, the following null hypotheses are developed in this study:

- H1*. Perceived usefulness will not have a positive effect on mobile banking use
H2. Perceived ease of use will not have a positive effect on mobile banking use
H3. Perceived credibility will not have a positive effect on mobile banking use
H4. Perceived enjoyment will not have a positive effect on mobile banking use
H5. Perceived self-efficacy will not have a positive effect on mobile banking use

HYPOTHESES TESTING AND DISCUSSIONS OF RESULTS

All employed items were reliable; mobile banking use ($\alpha = .938$); perceived usefulness ($\alpha = .936$); perceived ease of use ($\alpha = .909$); perceived credibility ($\alpha = .873$); perceived enjoyment ($\alpha = .803$); and perceived self-efficacy ($\alpha = .894$). In short, the Cronbach's alpha values for all dimensions range from 0.803 to 0.938, exceeding the minimum alpha of 0.6 (Hair et al., 1998), thus the constructs measures are deemed reliable.

Table 2: Summary of regression result and alpha

Independent variables	R ²	Adjusted R ²	Standardized Beta	t	Sig.	F	α
Constant	0.711	0.701		1.301	0.195	71.952 (0.000**)	.938
Perceived usefulness			0.088	1.005	0.317n.s.		.936
Perceived ease of use			0.097	1.319	0.189n.s.		.909
Perceived credibility			0.282	4.431	0.000**		.873
Perceived enjoyment			0.240	2.899	0.004**		.803
Perceived self-efficacy			0.277	4.150	0.000**		.894

Note: ** $p < 0.01$, * $p < 0.05$, n.s. denotes not significant

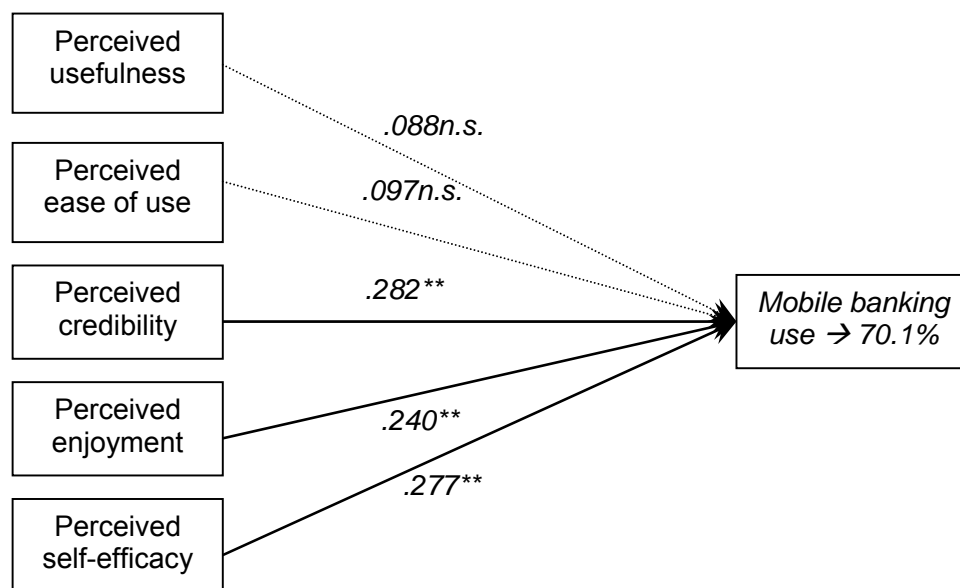
As recommended by Pikkarainen et al. (2004), the independent variables of the current study were aggregated. This includes perceived usefulness, perceived ease of use, perceived credibility, perceived enjoyment and perceived self-efficacy. The similar approach is also extended to the dependent variable. As displayed in Table 2, perceived usefulness had a weak relationship to the mobile banking use ($t=1.005$, p -value=0.317). The results are somehow contradicted with the study Guriting and Ndubisi (2006) and Ramayah and Mohd-Suki (2006) who generated a significant relationship between perceived usefulness and IS adoption. The similar result is also extended for perceived ease of use. Perceived ease of use had an insignificant relationship to the mobile banking use ($t=1.319$, p -value=0.189). The results produce a contradiction as compared to the original TAM (Davis, 1989), where perceived usefulness and perceived ease of use were significant predictors for IS adoption. Furthermore, the present study is inconsistent to what was found by Luarn and Lin (2005). Luarn and Lin (2005) found a significant relationship between perceived ease of use and mobile banking adoption. In

short, the two TAM's constructs are not the predictors for mobile banking use. On the other hand, the added explanatory variables have found to be significant.

Perceived credibility had a significant relationship to the mobile banking use ($t=4.431$, p -value=0.000). The previous argument from Ramayah and Ling (2002) and Pikkarainen et al. (2004) are consistent with the current result, which indicated that perceived credibility affects individual decision to use the system. Similarly, perceived enjoyment and perceived self-efficacy were also had a significant relationship to the mobile banking use with ($t=2.899$, p -value=0.004) and ($t=4.150$, p -value=0.000) respectively. The latter is consistent to what was found by Pikkarainen et al. (2004) and Nysveen et al. (2005). The former is consistent to what was Luarn and Lin (2005) and Wang et al. (2003) found. Overall, out of 5 hypotheses, only three hypotheses were rejected namely $H3$, $H4$ and $H5$ whilst $H1$ and $H2$ were not rejected.

CONCLUSION AND PRACTICAL IMPLICATIONS

This study has discussed mobile banking acceptance among *Sabahan* bank customers in Kota Kinabalu, Sabah, Eastern-Malaysia, Malaysia. The result of this study demonstrates that perceived usefulness and perceived ease of use have low impact on mobile banking use. On the other hand, perceived credibility, perceived enjoyment and perceived self-efficacy were found to be very important patronage factors for mobile banking use.



Note: ** $p < 0.01$, * $p < 0.05$, n.s. denotes not significant

Figure 2: Analyzed modified model for mobile banking

This study evidently has shown that perceived usefulness and perceived ease of use are found to be insignificant to the mobile banking use. This explains that *Sabahan* bank

customers possess little awareness about the usefulness and ease of mobile banking use. Placing a banner that carries the title of “*Mobile Banking Is Your Future Bank*” at bank branches is possible to escalate one’s familiarity with regard to mobile banking services. Similarly, more brochures should be made available at the branches for mobile banking to encourage effective mobile banking information dissemination. Importantly, bank officers can also address the usefulness of mobile banking to bank customers when it is necessary. These efforts are at least able to elevate bank customers’ knowledge on the usefulness and ease of use of mobile banking services.

The added variables namely perceived credibility and perceived self-efficacy have a strong influence over the mobile banking use. The bank management therefore should render focus on the issue of perceived credibility. Matters on security need to be effectively mentioned in brochures/booklet of mobile banking. This helps to instill confidence of prospective users. Concerned with perceived self-efficacy, people relatively possess little skills in operating mobile banking services. Opening e-banking counters would at least able to facilitate the use of mobile banking services.

Since mobile phone is viewed as an entertainment gadget to some individuals, therefore perceived enjoyment can play an essential role in expounding mobile banking use. The present study reported that perceived enjoyment had a significant affect to the mobile banking use. In order to reduce bank tendency to the manufacturers such as Erikson, Samsung and Nokia, it is therefore possible for them to work on collaboration in order to create a friendlier device of mobile phone that incorporates the function of banking transactions and also the inclusion of multimedia elements that promote perceived enjoyment whilst one’s performing banking transactions. This explains that mobile phone is not only a gadget for communications but also for interactive banking transactions.

Particularly, this study suffered from three limitations. Firstly, this study examined the local ethnic communities from Sabah with respect to their perceptions on the mobile banking usage intentions. This means that the sample used in this study is referred to a particular geography only in which it is not be fully generalizable to other users groups in other geographies. It is of utmost importance for future studies to include other geographies in order to meeting the generalization of the finding to other environments. Secondly, this study is based on behavioral intention of individual for mobile banking use. This explains that different factors perhaps influence those who are actually use mobile banking. In order to tackle this limitation, the future research could be working on a study that investigates user and non-user of mobile banking not only in Sabah but also other states in Malaysia. Thirdly, this study results revealed the original constructs of TAM, namely “perceived usefulness” and “perceived ease of use” are found to be insignificant. These explanatory factors have limited impacts on the mobile banking acceptance among *Sabahan* bank customers. Future studies should re-work on the factors using comprehensive samples in order to yield significant results.

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