CONSUMERS’ PARSIMONY OF MOBILE INTERNET BANKING USAGE IN MALAYSIA

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Abstract

Purpose of the Study: The objective of this study is to empirically investigate the determinants of the adoption of mobile Internet Banking in Malaysia. However, the slow growth of mobile Internet banking usage as comparison to online Internet Banking increases the concern on the adoption and parsimony issues of mobile Internet banking (MI-Banking) usage in managing personal finances and banking activities.

Methodology: Self-administered survey was applied and analyzed by using V-Base structural equation modeling. The responses of 358 respondents were analyzed by using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS) technique.

Results: The findings of this study revealed that perceived ease of use, perceived usefulness, and perceived risk significantly influenced the adoption of mobile internet banking, while perceived ease of use was found to have the greatest influence on the overall adoption of mobile internet banking. At the same token, perceived ease of use was found to have a significant influence on perceived usefulness.

Implications: The application of mobile internet services has increased and mobile phones are becoming significant tools for managing and controlling personal finances and spending. Thus, a study was conducted to seek clarification on the predictors of mobile Internet banking adoption among Malaysians that will embark further and deeper studies in the context of mobile Internet Banking.

Keywords: Mobile Banking Adoption, Generation Y, Perceived Ease of Use, Perceived Usefulness, Perceived Risk

INTRODUCTION

The advance of mobile telecommunication technology and information technology (IT) has created an enormous effect on the banking sector as mobile phones have become a common device of our daily usage (Al-Jabri & Sohail, 2012). Therefore, it creates new opportunities for banks to stimulate their online transactions and information exchanges (Aboelmaged & Gebba, 2013). Despite m-banking being comfortable for consumers, Malaysia is still in the initial stages of m-banking (Daud et al., 2011). The statistics in Bank Negara Malaysia (2016) showed that the number of subscribers of m-banking and the penetration rate of m-banking is still less than half of the population within the last ten years. In 2015, there were a total of 7.3 million subscribers out of 30.4 million individuals or 23.5 percent of the m-banking penetration rate was against a total of 19.8 million subscribers or 63.7 percent of internet banking penetration rate. Moreover, although the Deputy Finance Minister Datuk Ahmad Maslan (2013) revealed that m-banking has a potential for growth for banking organizations, the head of Trustees from the IBM division Tim Lau argued that the devices used by consumers are all subjected to the risk of sophisticated malicious software or malware (Ahmad, 2014). Cybersecurity company Symantec Corporation (2016) revealed that ransom ware is a big threat for consumers in the coming months as their smartphones were vulnerable to attacks by dangerous malware and crypto ransom ware, and it will be probably averaging 20 attacks per day in Malaysia (Meikeng & Chin, 2016). Therefore, consumers are aware of the risks associated with cybercrimes and are skeptical to adopt m-banking.

The rapid growth of e-commerce has a great impact on the way businesses are performed. The features of the global electronic market lead to unique opportunities for companies to attract a larger population of customers (Al-Nasser et al., 2015). Different facets of the e-shopping behavior of consumers have been investigated in previous literature. These facets can generally be divided into behavioral intention, actual behavior, and attitude toward behavior. Some studies dedicated to the topic consider intention to e-shop as a dependent variable (Al-Nasser et al., 2014). Market implications help in either encouraging or discouraging the purchase of such product in the economy. It may also help in determining the direction of the local industries and the marketability of their products, which help in increasing productivity or improvement in such products (Islam & Abdulllah, 2013).
Furthermore, generation-Y (gen-Y) people are considered as active users of mobile technology devices and are targeted as a profitable segment by financial organizations to offer innovative products and services. They are more likely to try out something new (Efma and Oracle Financial Services, 2010; Valentine, 2014). In Malaysia, there are total 9.8 million individuals out of which 30.4 million are categorized as gen-Y. There are around 33 percent of population between the age of 16 and 35 and it is the largest segment of population in Malaysia (Population of the World, 2016). Among this generation, nearly 60 percent are hand phone users (MCMC, 2014; Tan, Chong, Loh, & Lin, 2010). Thus, understanding the needs of innovativeness of gen-Y is important for financial organizations to make them adopt m-banking services (Debasish & Dey, 2015; Efma and Oracle Financial Services, 2010; Valentine, 2014). Therefore, this study examines the factors that manipulate the m-banking adoption among gen-Y in Malaysia.

LITERATURE REVIEW

Mobile banking or m-banking is an evolutionary electronic banking system which aids individuals to perform their monetary transactions by using handheld or mobile devices (Oliveira, Faria, Thomas, & Popovic, 2014). It enables users to carry out real-time transactions anytime and anywhere. M-banking offers two ways of conducting banking transactions, which include internet-based banking and non-internet-based banking transactions. M-banking services containing SMS banking, mobile applications, browser (Internet)-based models, and application (software)-oriented (Bhatt & Bhatt, 2016). The common activities that can be performed through m-banking are checking the account balance, transfer of money from one account to another, and making bill payments (Laukkanen & Cruz, 2010). Therefore, m-banking is not only comfortable and flexible for consumers (Cheah, Teo, Sim, Oon, & Tan, 2011), but it also is a great marketing medium for banking organizations to capture new markets (Gummerus & Pihlström, 2011).

This study involves self-administered questionnaire as the technique of primary data collection as it enables researchers to collect data within a short period of time, and it also motivates respondents to provide their feedback (Zikmund, Babin, Carr, & Griffin, 2010). Out of 494 returned questionnaires, 136 questionnaires were excluded due to non-users of m-banking. This study focuses on the users of m-banking. Thus, 358 complete survey responses were used as data for this study. All the respondents were 16 to 35 years old. Furthermore, 64.5 percent of the respondents owned more than one mobile phone and used m-banking services for balance inquiry, account transfer, bill payments, etc.

Measurement items in the questionnaire were adopted from Alalwan, Dwivedi, Rana and Williams (2016); Faria (2012); and Sripalawat, Thongmak and Ngramyarn (2011). Based on Sekaran and Bougie (2013), the popular Likert scale was applied for the research. In this study, several constructs are measured using the 5-point Likert scale which is arranged from (1) strongly disagree to (5) strongly agree, with (3) neither agree nor disagree as the middle point. English language was used in the study and in the questionnaire because all respondents were English literate.

This study applies purposive sampling from non-probability sampling. This is due to the information necessary to obtain from the specific target group which is gen-Y in Malaysia in order to provide the desired information (Sekaran & Bougie, 2013). The researcher utilized least squares regression method to analyze the data. SPSS 20 is used to analyze the collected data which were further analyzed by using Smart PLS 2 M3.

METHODOLOGY

Theoretical Framework

The theoretical framework (Figure 1) is created on the basis of the study objective, which is to investigate the determinants of m-banking adoption among generation Y in Malaysia. The hypotheses for the study are also framed on the basis of the theoretical framework as discussed in the next sections.

![Theoretical Framework Diagram](https://example.com/diagram.png)

Figure 1. Theoretical Framework
The Influence of Perceived Ease of Use

Perceived ease of use is defined as the degree to which a person trusts that they are free from putting efforts when adopting to a system (Davis, 1989). When users face process-oriented issues, perceived ease of use becomes the key factor. Perhaps, it is more important than the perceived usefulness of information system to predict the m-banking adoption (Faniran & Odumeru, 2015; Ismail & Masinge, 2011). Thus, perceived ease of use is assumed to be an important construct in determining the adoption of m-banking and certain technical knowledge and skills are required to adopt m-banking.

H1: Perceived ease of use has significantly influenced m-banking adoption among gen-Y in Malaysia.

Moreover, past studies confirm the significant influence of perceived ease of use towards perceived usefulness (Mohammadi, 2015; Zarmpou, Saprikis, Markos, & Vlachopoulou, 2012). The higher the degree of perceived ease of use, the higher will be the degree of perceived usefulness (Davis, 1989). Individuals who notice the ease of use will increase their conduct of certain activities. Mobile banking needs to be simple, convenient, and comfortable to learn and adopt to prevent any problems in adopting the m-banking system. Thus, we can hypothesize the following:

H2: Perceived ease of use has significantly influenced perceived usefulness of m-banking among gen-Y in Malaysia.

The Influence of Perceived Usefulness

Perceived usefulness refers to the degree to which a person is confident with the adoption of a particular system as it increases the job performance (Davis, 1989). Perceived usefulness also refers to the mobile technology and services that offers the advantage of using it every day (Knutsen, Constantiou, & Damsgaard, 2005). Simultaneously, it will enable potential users to adopt mobile technology with regards to the usefulness of system innovation (Chau, 1996; Venkatesh & Davis, 2000). Perceived usefulness is identified to have a significant impact on the adoption of m-banking (Debasish & Dey, 2015; Ismail & Masinge, 2011). Consequently, we hypothesized that:

H3: Perceived usefulness has significantly influenced m-banking adoption among gen-Y in Malaysia.

The Influence of Perceived Risk

Individuals are reluctant to adopt m-banking if there is uncertainty. Individuals with a high level of uncertainty would be unwilling to adopt m-banking (Debasish & Dey, 2015; Ismail & Masinge, 2011). Perceived risks also create an expectation of loss for an individual and individual who has higher expectation of loss will generate a higher level of perceived risk. Prior studies revealed that perceived risks influence m-banking adoption because it would discourage people from adopting m-banking (Hosseini, Fatemifar, & Rahimzadeh, 2015; Ismail & Masinge, 2011). Accordingly, this study hypothesized that:

H4: Perceived risk has significantly influenced m-banking adoption among gen-Y in Malaysia.

RESULTS AND DISCUSSION

Analysis of the Measurement Model

The assessment of measurement model was conducted by using SmartPLS 2.0 software package to investigate the goodness of or suitability for further statistical assessments. In order to achieve this, the measurement model of this study was investigated. First, convergent validity is a concept that should be correlated to one another among multiple items. The value of average variance extracted (AVE) should be at least 0.50 for every construct and the factor loading should be at least 0.50 for each item to reach the acceptable level (Hair, Black, Babin, & Anderson, 2010). Moreover, composite reliability was used to support convergent validity and the recommended value should be at least 0.60 (Bagozzi & Yi, 1988).

| Table 1: The Convergent Validity Assessment Results |
|-----------------------------------------------|
| **Model Construct** | **Measurement Item** | **Loadings** | **AVE** | **Composite Reliability** |
| MBA | MBA1 | 0.5624 | | |
| MBA2 | 0.7307 | | | |
| MBA 3 | 0.8040 | | 0.5276 | 0.8145 |
| MBA 4 | 0.7834 | | | |

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Model Construct | Measurement Item | Loadings | AVE | Composite Reliability
--- | --- | --- | --- | ---
PEOU | PEOU1 | 0.6300 | | |
| PEOU2 | 0.7214 | 0.5117 | 0.8066 |
| PEOU3 | 0.7582 | |
| PEOU4 | 0.7446 | |
PR | PR1 | 0.6613 | | |
| PR2 | 0.7868 | |
| PR3 | 0.7011 | 0.5028 | 0.8001 |
| PR4 | 0.6808 | |
PU | PU1 | 0.6771 | |
| PU2 | 0.7205 | |
| PU3 | 0.6877 | |
| PU4 | 0.7427 | |

Note: Composite Reliability (CR) = \((\text{square of the summation of the factor loadings}) / (\text{square of the summation of the factor loadings} + \text{square of the summation of the error variances})\); Average Variance Extracted (AVE) = \((\text{summation of all the square of the factor loadings}) / (\text{summation of the square of the factor loadings} + \text{square of the error variances})\). Where, the ‘MBA’ abbreviation refers to mobile banking adoption, PEOU = perceived ease of use. The ‘PR’ abbreviation refers to perceived risk. The ‘PU’ abbreviation refers to perceived usefulness.

Thus, the results showed in Table 1 above describe that all the items have the individual loading value of more than 0.50, and the composite reliability value of all constructs are larger than 0.60. Additionally, the AVE of all the constructs are larger than 0.50 which is in between 0.5005 and 0.5276. This had indicated a good level of construct validity of measures used.

Next, follow by examine its connection with other constructs. Discriminant validity is employed and it is a type of construct validity and it is used to predict that two variables are uncorrelated or different constructs do not overlap (Sekaran & Bougie, 2013).

| Constructs | MBA | PEOU | PR | PU |
|---|---|---|---|---|
| MBA | 0.726 | | | |
| PEOU | 0.335 | 0.715 | | |
| PR | 0.182 | 0.167 | 0.709 | |
| PU | 0.199 | 0.278 | 0.230 | 0.707 |

Note: Where, the ‘MBA’ abbreviation refers to mobile banking adoption, PEOU = perceived ease of use. The ‘PR’ abbreviation refers to perceived risk. The ‘PU’ abbreviation refers to perceived usefulness.

The reflective measurement model validation procedure is ended once discriminant validity was examined and fulfilled all the assumptions. As is demonstrated in Table 2, square roots of AVE of the latent variables are all larger than its squared correlations, meaning that discriminant validity in this study is confirmed.

**Analysis of the Structural Model**

Once the goodness of the measurement model was confirmed, the next step was to identify the hypothesized relationship among the variables. The evaluation of structural model was investigated after establishing the appropriateness of the measures in the conceptual research model.
Figure 2. Items Loadings, Path Coefficient and R2 Values of Structural Model

Note: Where, the ‘MBA’ abbreviation refers to mobile banking adoption, PEOU = perceived ease of use. The ‘PR’ abbreviation refers to perceived risk. The ‘PU’ abbreviation refers to perceived usefulness.

In order to examine and clarify the variance and measure the quality of endogenous variables in the model, the structural model specification uses the coefficient of determination (R2 values) of the endogenous variables to assess the structural model as shown in Figure 2 and Table 3. In this study, the R2 values of the endogenous variables are at the acceptable level, as the MBA was at 13.62 percent and PU was at 7.73 percent. The additional support can be generated by communality value with all of them above 0.4 and a redundancy value not more than 0.10. All constructs have met all basic requirements for the structural model specification to verify the structural model of the research.

| Constructs | Level of Construct | R Square | Redundancy | Communality |
|------------|--------------------|----------|------------|-------------|
| MBA        | First Order        | 0.1362*  | 0.0579     | 0.5276      |
| PEOU       | First Order        |          | First Predictor | First Predictor | 0.5117 |
| PR         | First Order        |          | First Predictor | First Predictor | 0.5028 |
| PU         | First Order        | 0.0773*  | 0.0364     | 0.5005      |

Note: Significant level R2 (Cohen, 1988): >0.32 (Substantial)***, >0.15 (moderate)***, >0.02 (weak)*. Where, the ‘MBA’ abbreviation refers to mobile banking adoption, PEOU = perceived ease of use. The ‘PR’ abbreviation refers to perceived risk. The ‘PU’ abbreviation refers to perceived usefulness.

Next, the bootstrapping technique is used to generate the path coefficients of the structural equation model with an entailed bootstrap sample of 5000 and a number of observations of 368 cases. Figure 2 conclude that the path coefficients are statistically significant in this study.

Figure 3. PLS-SEM Bootstrapping of Study Model
Note: Where, the ‘MBA’ abbreviation refers to mobile banking adoption, PEOU = perceived ease of use. The ‘PR’ abbreviation refers to perceived risk. The ‘PU’ abbreviation refers to perceived usefulness.

After the test of measurement model and structural model, Table 4 was generated to illustrate the assessment results. In the total effects of the bootstrapping technique, T-value with the requirement value level of more than 1.65 for 10 percent of significant level for a two-tailed test is the standard used to support hypotheses.

| Hypotheses | Relationship      | Beta Value ($\beta$) | Standard Error | T Statistics | Supported |
|------------|-------------------|-----------------------|----------------|--------------|-----------|
| $H1$       | PEOU $\rightarrow$ MBA | 0.316                | 0.052          | 6.079        | Yes       |
| $H2$       | PEOU $\rightarrow$ PU   | 0.278                | 0.049          | 5.729        | Yes       |
| $H3$       | PU $\rightarrow$ MBA    | 0.092                | 0.054          | 1.703        | Yes       |
| $H4$       | PR $\rightarrow$ MBA    | 0.113                | 0.048          | 2.368        | Yes       |

Note: *Significant at p<0.10 at two-tailed T statistics value of 1.65.

The results revealed that perceived ease of use, perceived usefulness and perceived risk with T value of 6.08, 1.70, and 2.37 indicate that there is a significant influence towards m-banking adoption. Statistically, perceived ease of use with beta value of 0.316 has the biggest impact on the m-banking adoption when compared to 0.092 of beta value for perceived usefulness and 0.113 for perceived risk. Therefore, hypotheses $H1$, $H3$, and $H4$ are supported. Moreover, the results of perceived ease of use also indicate a significant relationship with perceived usefulness in the T value of 5.73. Thus, $H2$ is supported.

The study was conducted to provide an understanding the determinants that could shape the adoption of m-banking among gen-Y customers. M-banking adoption was found to be affected by perceived ease of use and perceived usefulness. The results in this study show that perceived ease of use significantly influences m-banking adoption among gen-Y customers in Malaysia. The finding is consistent with previous studies (Faniran & Odumeru, 2015; Ismail & Masinge, 2011). This indicated that gen-Y perceives that the m-banking system is not difficult and they require a little effort to learn how to adopt to m-banking. Since m-banking requires the utilization of certain technological knowledge and skills to perform all tasks without the help of the banking staff, perceived ease of use is an important construct in the m-banking adoption.

The results in this study indicate that perceived ease of use significantly influences perceived usefulness. The results are consistent with other researchers’ findings in prior studies (Mohammadi, 2015; Zampou et al., 2012). Gen-Y in this study has recognized that perceived ease of use will enhance the usefulness and performance of m-banking. Moreover, a majority of the respondents owned more than one phone in this study. Thus, in other words, they perceive that using m-banking is not difficult and require less efforts to use, and that they will use the system in their daily transactions.

Perceived usefulness is found to have a significant relationship with m-banking adoption. The result is in line with previous studies in the domain of m-banking (Alsamymdai, 2014; Debasish & Dey, 2015; Ismail & Masinge, 2011). This result revealed that usefulness and benefits of m-banking lead to the adoption of m-banking. Therefore, this study suggests that financial institutions should promote the advantages and usefulness of m-banking, especially for university students.

In term of perceived risks, the empirical analysis in this study had indicated a significant influence on m-banking adoption among gen-Y customers in Malaysia. Thus, the finding is consistent with prior studies, which revealed an inverse relationship (Oluch, Abaja, Mwangi, & Githeko, 2015). In this study, all respondents were gen-Y and university students and they were aware of the real risk situation. They also agreed that m-banking lacks security.

**CONCLUSION**

This research investigated the influencing determinants that contribute to the adoption of m-banking among gen-Y in Malaysia. The empirical results specified that perceived ease of use, perceived usefulness, and perceived risk were
significantly linked to the adoption of m-banking. The perceived ease of use was also found to have a significant effect in perceived usefulness. The results of the study added to the literature body in the emerging of the antecedent of m-banking in Malaysia.

This study adds to the body knowledge for gen-Y consumers’ behavior of m-banking adoption. The understanding of the adoption of m-banking among gen-Y is needed to guide future research in developing countries. Moreover, findings of this study allow practitioners in the financial industry to promote and improve the usage of the m-banking technology in Malaysia. The finding of this study will also assist practitioners in promoting the advantages of m-banking, which might increase the m-banking penetration rate in Malaysia. Overall, the findings enable financial institutions to invest in m-banking in Malaysia based on the knowledge gained from this study.

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