Perceived Risk towards Mobile Banking: A case study of Malaysia Young Adulthood

Shuhaida Mohamed Shuhidan1,2, Saidatul Rahah Hamidi2, Intan Syazwani Saleh2

1Accounting Research Institute, Universiti Teknologi MARA, 40450, Shah Alam, Selangor, Malaysia
2Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, 40450, Shah Alam, Selangor, Malaysia

Corresponding author: shuhaida@tmsk.uitm.edu.my, rahah@tmsk.uitm.edu.my and intan.syaza@gmail.com

Abstract. The advancement of technology and the raise of smart devices ownership in Malaysia has eventually increase the exploration of mobile banking services. Mobile banking has been first commercialized in Malaysia on 2005 and expected to growth. Despite the exponential growth, the mobile banking penetration rate is slow compared to online banking. This study aims to highlight the issues and challenges of mobile banking and to have insight on young adulthood perceived risk towards mobile banking, specifically in Malaysia. In order to support the exploratory study, these risks are surveyed in quantitative study conducted among young adulthood in Malaysia. The self-administered questionnaire distributed through email with 384 respondents indicated that the most impacted facets perceived risks are performance risk, following by security risk. The results of this study can be used by the practitioner to address the customer challenges, customer interest and concern for mobile banking service improvement.

1. Introduction

Banking systems adopt technology to support bank services efficiently. Mobile banking is a platform of performing financial activities from portable devices such as mobile phones, or tablets that is connected to telecommunication network. Mobile banking also defined as an interaction channel between consumers and banks through mobile devices [1]. Mobile banking bring benefits to consumer where consumer can access their bank account at their convenient time and locations [2]. Mobile banking provide services includes e-account statements, account histories, transaction records, loan statements, card statements, various options of bill payments and many more.

Mobile banking services form an important innovation in the banking sector and it has the good potential in the market. The acceptance of mobile banking usage depends on motivating factors such as pursuance, speed of transaction, communication, ease of use and assurance [3]. The availability of mobile banking is to provide services 24-hours, access from any location and time savings are the benefits driving the use of mobile banking. Furthermore, banking sector in Malaysia has good security posture with fortified network parameters, strong security controls, regular third party audit and two-factor authentication in place [4].

Mobile banking offers significant benefits not only to customers, but also to the financial sectors. Mobile banking provides convenience of transacting anytime, anywhere. The advantages of mobile
banking to end-users include: (i) security (ii) user-friendly interface (iii) save time (iv) dynamic facility (v) dynamic account monitoring (vi) real time access (vii) ubiquitous access [5]. Through mobile banking, reduces the cost and time to travel and queued for banking services. Meanwhile, to increase customer’s confidence to the newly emerging security technology, service provider provide secure and safety environment for mobile banking services. Central Bank is responsible to ensure online transactions can be made in a safe and efficient manner. Thus, as an initiate, roadshow to bring awareness of threat and online fraud are actively conducted by Bank Negara Malaysia. Security issues are argued to be among the greatest concerns on adoption of mobile banking [6]. The impeding factors includes the study of drawback factors of mobile banking usage such as personal desires, personal knowledge, habit resistance to innovation and experience.

2. Malaysia Smartphone Users
Statistics in survey handled by Malaysian Communications and Multimedia Commission in survey hand phone user survey 2014 showing that 52.4 percent of respondent using smartphone. According to Figure 1, young adulthood in the range of 20 to 39 have the highest smartphone percentage [7]. This study focuses on the largest group who own smartphone, range 20 to 39 years old, who are in the young adulthood category. The term young adulthood, is referred as the transition from adolescence to adulthood that is characterized by experimentation and exploration through establishing personal targets and economic background [8].

![Figure 1: Percentage of Smartphone Users by Age Category [7]](image)

3. Issues and Challenges in Mobile banking
Mobile banking refers to the use of mobile communication to perform financial activities. According to survey done by InMobi (2011), there is more than half Malaysian use mobile to access to the web. Mobile is increasingly use for communication, entertainment and shopping [9]. The increasing of mobile application and services made easy for consumers to access from everywhere and at any time. According to Bank Negara Malaysia, the number of mobile subscribers is at 25.2 percent penetration rate of population. Currently, mobile banking services offer lots of services concerning account information, Payment and transfers, Investment, Support and Content service (Maybank2u.com). In 2006, M2U mobile was introduced for those with GPRS/3G mobile phones. The phenomenon followed by CIMB Bank Berhad and others. List of banks that have mobile banking services in Malaysia are as follows; Al Rajhi Banking & Investment Corporation (Malaysia) Berhad, AmBank (M) Berhad, Bank Islam Malaysia Berhad, Bank Simpanan Nasional, CIMB Bank Berhad, Citibank Berhad, Hong Leong Bank Berhad, HSBC Bank Malaysia Berhad, Malayan Banking Berhad, OCBC Bank (Malaysia) Berhad, Public Bank Berhad, RHB Bank Berhad and Standard Chartered Bank Malaysia Berhad

The slow adoption of mobile banking technology are cause by security issues [10]. The method of financial services via mobile devices with telecommunication network make customers justifiably
nervous and no confident to use the mobile banking technology [11]. Each banks have their own protection way that may differ with other banks. As very few incident of mobile banking the risk are still unknown and security action are undefined [12].

The main challenges in mobile banking are to convince and educate customers on safety usage and the benefits of mobile banking technology. The relevant issues related to mobile banking technology are skills, safety of usage and confidentiality. There exist risk of failures of technological advancements [13] that may cause insecurities to users. Customers reluctant to use mobile banking because they have fear of privacy breach across telecommunication network. There were 50 Android mobile users hit by malware targeting mobile banking users in Singapore [14]. Even though the number are small compared to the population however the issue cause big impact to the individual intention of using mobile banking.

The anxiety of broken and slow internet connection during transaction and possible loss their money is one of customers concern. Mobile banking requires internet connection to enable success transaction. For those who are in rural area, they will have difficulties to access to the mobile banking [15].

4. Perceived Risk in Mobile Banking

Mobile Banking is an extension of internet banking, which upgrading the ability of technology to support consumers in their convenient time and place. Major challenges of mobile banking are the experience and maturity to operate within the complex ecosystem. The immaturity may open space to risks. Mobile banking are open to threat such as unsecured networks, mobile malware, third-party applications and risky customer behaviour [3].

Lee (2009) conducted a study on perceived risk of internet banking adoption. He divided perceived risk to five facets: performance risk, social risk, financial risk, time risk and security risk which provided more in-depth understanding of characteristics of risks towards internet banking [16]. Recent literature on banking innovations reveals that perceived risk is an important factor affecting the customer's intention to use mobile banking [17]. Five facets derived from perceived risks for mobile banking [16] as described as follows:

**Performance Risk** refers to the losses incurred by deficiencies or malfunctions of mobile banking. Mobile phone for example, has limited battery life and wireless connection may break, limiting the use of mobile services. Consumers feel the insecurity of their bank account when system are suddenly disconnect or breakdown [18]. These may relate to the ability of consumers to operate the mobile banking services within the reasonable time. In additional, the ability of mobile banking in terms of moving section to another section of services in understandable manner impacts the effectiveness of the mobile banking.

**Security or Privacy Risk** is defined as potential loss due to fraud or a hacker which compromising the security of a mobile banking user. The PIN codes that are portable be placed in phone may be used by others by hacking and other means. This action can cause potential security risk and privacy risk [18]. The new means of stealing consumer information is through phishing. Phishers are obtaining consumer sensitive data, such username, password and credit card information by masquerading as a trust-worthy entity in an electronic communications [19].

**Time or Convenience Risk** refers to the loss of time in any inconvenience incurred due to the delays of receiving payment or the difficulties to navigate the mobile banking (finding the appropriate services). With relate to the time, the infrastructure of mobile banking that can be cater the speed of changing section without any lagging [20]. But somehow, the relations are back to the speed of internet connection used by customer.
Social Risk refers to the possibility to not use the mobile banking because of disapproval or negative view from friends, family, groups or even media. Social risk reflects the potential loss of status in a social group, as a result of adopting a product or service.

Financial Risk refers to the potential of losing money due to transaction error or bank account misuse. Customers are fear that they themselves may make mistakes in their banking processes if they use a computer [18] or a cell phone [21]. The traditional banking services given advantages because there are official receipts and proceeding compared to online banking and mobile banking. Therefore, extra effort to retrieve faulty payment and compensation will take more time compared to traditional way.

5. Methodology

Simple random sampling was used for selecting the sample of the study. A computerized email survey was deploy to collect the data. Several items were used to measure all variables and for each item, a corresponding Likert-Style format with anchors ranging from 1 as “Strongly Disagree” and 5 as “Strongly Agree” was used. For each item listed, the respondents were requested to mark any of the five options given. The collected data were analyzed using statistical computer programs known as IBM SPSS. The results of the finding will give overall view on the intention use of mobile banking by young adulthood.

5.1 Population, Sample and Sampling Procedure

Sampling size is the subset of the population which can represent as the whole targeted population [22]. The unit of this study is young adulthood aged below than 35, who are smartphone users with or without mobile banking subscribers, in Malaysia. Sampling is necessary as it is impracticable to study entire populations due to time and budget constraint [23]. The survey research consists of the following descriptive survey:

i. Quantitative analysis via on-line Questionnaires survey.

ii. Respondents: Research was conducted by distributing on-line questionnaires via email and whatsapp as a communication medium or tools to University students, whose age ranged from 20 to 39.

The research process is a sequential step of developing a particular research. Adopting seven-step sequence from Howard and Sharp (1983), each steps required equal attention to save time throughout conducting the research study [24]. The first step involved literature search on the chosen topic and preliminary study in the form of survey based questionnaire. The pilot test was conducted to confirm the problem actually exist in the target population. Broad searching for relevant information and literature review of journals, articles and books were conducted to develop a structure and focus for the research study. The structure was based from framework of previous study and the focus was constructed by presenting research questions, hypotheses and objectives. At step number three, research design was formed. Once the methodology was determined, research model and instrumentation were developed. Pilot study was conducted to evaluate competency of instruments and make necessary revision prior to implementation of the study. Once instruments were finalized, data collection was rolled out to the sample population. Moving on was data analysis to analyze and interpret the collected data as well as the hypotheses testing. Finally, it was to conclude and present the results and findings in written report (refer Table 1).
Table 1: Seven-Step of Research Process [24]

| Step | Research Process | Description |
|------|------------------|-------------|
| 1    | Identify the broad area of study | Conducted literature search and preliminary study to confirm on the area of study |
| 2    | Select a topic and develop a focus | Developed of aims, objectives for the research, research questions and hypotheses |
| 3    | Decide on approach | Selected a methodology to answer research questions and meet research objectives includes research strategy, design, data collection method and data analysis plan |
| 4    | Plan how you will perform the research | Developed research model and instrumentation. Conduct pilot study for the on-line survey questionnaire. |
| 5    | Data Collection | Gathered data and information by spending time in the field administering questionnaires and interviewing people |
| 6    | Data Analysis | Analyzed and interpreted data collected in step #5 and hypotheses testing |
| 7    | Conclusion & Presentation | Presented the results and findings. Arranged findings in a manner that answers research questions and showed how the research has met its original aims and objectives |

6. Results and Discussions
Perceived risk consist of five facets: Performance Risk, Security/Privacy Risk, Time Risk, Social Risk and Financial Risk. The questionnaire is set to be available online based on [16]. Targeted respondents are young adulthood, aged ranged from 20 to 39 years old in Malaysia. These group of people were sent an email invitation to respond to the questionnaire. There were 384 respondents respond to the questionnaire. There were 2016 male respondents and 178 female respondents, and they are all smartphone users. Table 2 summarized the demographic data of the respondents.

Table 2: Demographics Data of Respondents

| Measure           | Value       | Frequency | %     |
|-------------------|-------------|-----------|-------|
| Gender            | Male        | 206       | 53.6  |
|                   | Female      | 178       | 29.4  |
| Education Background | High School | 0         | 0     |
|                   | Diploma     | 0         | 0     |
|                   | First Degree | 279       | 72.7  |
|                   | Postgraduate | 205       | 27.3  |
|                   | Others      | 0         | 0     |
| Occupation        | Public Sector | 68        | 17.7  |
|                   | Private Sector | 316      | 82.3  |
|                   | Own Businesses | 0        | 0     |
|                   | Student      | 0         | 0     |
|                   | Retired      | 0         | 0     |
| Household Income  | <2000        | 0         | 0     |
|                   | 2000-3999   | 176       | 45.8  |
|                   | 4000-4999   | 72        | 18.8  |
|                   | >5000        | 136       | 35.4  |
| Smartphone user? | Yes         | 384       | 100   |
|                   | No          | 0         | 0     |
Table 3: Five Facets of Perceived Risks

| Five-Facets          | Items                                                                 | Mean  | Std. Deviation |
|----------------------|------------------------------------------------------------------------|-------|----------------|
| Performance Risk     | Mobile Banking services may not perform well because of network problems. | 4.2031| 0.70462        |
|                      | Due to poor network of mobile in some areas may take a lot of time to do transactions through Mobile Banking. | 4.2109| 0.70787        |
| Security/Privacy Risk| My personal information due to mobile banking sign up of transaction would be used without my knowledge. | 3.2135| 1.00455        |
|                      | There is a fear of using mobile banking because I think other people may access my account through hacking or other means. | 3.6458| 0.59553        |
| Time Risk            | Usage of mobile banking lead to time fixing payment errors.             | 3.1875| 1.48667        |
| Social Risk          | The user's friends, family and colleagues would think less of them in case of any wrong transactions through Mobile Banking. | 3.0573| 1.24193        |
| Financial Risk       | Mobile Banking services may not perform well and process payment incorrectly. | 3.3828| 1.28124        |
|                      | When transferring money through Mobile Banking the users afraid that they will lose money due careless and mistakes. | 3.5990| 0.75139        |
| Overall Conclusion   | On the whole it would be risky if I use Mobile Banking.               | 3.2839| 0.8366         |
|                      | Mobile Banking is dangerous to use.                                    | 2.7865| 1.0403         |

All items asked in questionnaire are described in Table 3. The highest mean of the responses are the lack of network achievement in some area that can cause limitation and prevention of intentionally use of mobile banking (mean = 4.2109, std deviation 0.7078). Next, is the network problem that can cause performance degradation will impact to the intention use of mobile banking with mean 4.2031 and standard deviation 0.70. The mean for each facets of [16], performance risk (4.2031), financial risk (3.4909), Security/Privacy Risk (3.4296), Time Risk (3.1875) and Social Risk (3.0573). Hence, the most impacted facets are performance risk, followed by financial risk, then, security risk. Based on security risk, respondents fear that their account will be visible to others, through hacking or other means. However, as an overall conclusion, respondents rate neutral for “On the whole it would be risky if I use Mobile Banking” (mean = 3.0352) as compared to the five facets.

7. Conclusion and Future Work
This study has highlighted the issues and challenges of mobile banking in Malaysia. Reinforcing might be the way to have mobile banking use as financial services. The perceived risk, are based on the five-facets; performance risk, security/privacy risk, time risk, social risk and financial risk. Overall the most impacted facets are performance risk. The results of this study can be used by practitioners to address the customer challenges, customer interest and concern for mobile banking service improvement. The contribution from service provider and customer end are expected to an improved services and increased number of penetration rate of mobile banking subscribers in Malaysia. Future work for this study includes researching on the impact of performance expectancy, effort expectancy, social influence, hedonic motivation, facilitating condition, price value and habit on the behavioural intention towards mobile banking.

Acknowledgments
This work was supported by Accounting Research Institute, Universiti Teknologi MARA through Ministry of Education Malaysia, under Grant (600-RMI/ARI_IRES 5/3(0039/2016)).

References
[1] Barnes, S. J., & Corbitt, B. (2003). Mobile banking: concept and potential. International Journal of Mobile Communications, 1(3), 273-288.
[2] Ghotbi, A., & Gharechedaghi, N. (2012). Banking, Challenges and Strategies in the Banking
[3] Kiran, K. V. D., Srivatsava, M. V. R., & Devi, K. G. (2014). Risk Management in Mobile Banking. International Journal of Engineering Research& Technology (IJERT), 3(3), 2278-0181.

[4] Kumar, A. (2014) Mobile banking security in Malaysia in 2015 /Interviewer: eLock.

[5] Goswami, D., & Raghavendran, S. (2009). Mobile-banking: can elephants and hippos tango? Journal of Business Strategy, 30(1), 14-20.

[6] Malhotra, R. (2011). Factors Affecting the Adoption of Mobile Banking in New Zealand.

[7] MCMC, M. C. a. M. C.-. (2014). Hand Phone Users Survey 2014. Retrieved from http://www.skmm.gov.my/Resources/Statistics/Hand-phone-Surveys.aspx

[8] Development in Early & Middle Adulthood, © 2016 Houghton Mifflin Harcourt. Url: https://www.cliffsnotes.com/study-guides/psychology/psychology/developmental-psychology-age-13-to-65/development-in-early--middle-adulthood

[9] InMobi. (2011). For more than half of Malaysian mobile web users, the mobile device is their preferred method of going online: InMobi.

[10] Luarna, P., & Lina, H.-H. (2005). Toward an understanding of the behavioral intention to use mobile banking. Computers in Human Behavior, 21(6), 873-891.

[11] Barbuta, I., Dobreen, S., G., M., Mihaila, M., & Screpnic, A. (2012). Mobile Payments Market Guide 2012. Retrieved from www.thepayers.com/reports

[12] Chandran, R. (2014). Pros and cons of Mobile banking. International Journal of Scientific and Research Publications, 4(10).

[13] S. M. Shuhidan, J. Said, S. H. Mokri and S. Kazemian, "Market orientation within technological companies: Risk based approach," 2016 3rd International Conference on Computer and Information Sciences (ICCOINS), Kuala Lumpur, 2016, pp. 43-48.doi: 10.1109/ICCOINS.2016.7783186

[14] Tam, I. (2015). Association of Banks in Singapore issues alert on malware targeting Android phone users. The Strait Times.

[15] Chandran, R. (2014). Pros and cons of Mobile banking. International Journal of Scientific and Research Publications, 4(10).

[16] Lee, M. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. Electronic Commerce Research and Applications, 8(3), 130-141.

[17] Lee, H., Zhang, Y., & Chen, K. L. (2013). An Investigation of Features and Security in Mobile Banking Strategy. Journal of International Technology and Information Management, 22(4).

[18] Kuismaa, T., Laukkana, T., & Hiltunen, M. (2007). Mapping the reasons for resistance to internet banking: a eans-end approach. Int J Inform Manage, 27(2), 75-85.

[19] Reavley, N. (2005). Securing online banking. Card Technology Today. doi:10.1016/S0965-2590(05)70389-3

[20] Forsythe, S., & Shi, B. (2003). Consumer Patronage and Risk Perceptions in Internet Shopping. Journal of Business Research.

[21] Laukkana, T., & Lauronen, J. (2005). Consumer value creation in mobile banking services. Int. J. of Mobile Communications, 3(4), 325-338.

[22] Burns, A. C., & Bush, R. F. (2010). Marketing Research (6 ed.): Pearson Education.

[23] Saunders, M., Lewis, P., & Thornhill, A. (2009). Research methods for business students (5 ed.): Pearson Education.

[24] Howard, & Sharp, K. (1983). The Management of a Student Research Project.