ADOPTION OF E-BANKING IN ISLAMIC BANKING INSTITUTIONS AMONG MUSLIM CUSTOMERS IN KEDAH

By
NUR FARRAH AIN BINTI ZAINUDDIN

Research Paper Submitted to
Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
in Partial Fulfillment of the Requirement for the
Master in Islamic Finance and Banking

PERMISSION TO USE

In presenting this research paper in partial fulfillment of the requirements for a Post Graduate degree from Universiti Utara Malaysia, I agree that the University Library makes a freely available for inspection. I further agree that permission for copying of this project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or, in their absence, by the Dean of Othman Yeop Abdullah Graduate School of Business. It is understood that any copying or publication or use of this research paper or parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition given to me and to the Universiti Utara Malaysia in any scholarly use which may be made of any material for my research paper.

Request for permission to copy or to make other use of materials in this research paper, in whole or in part should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

ABSTRACT

Electronic banking or known as e-banking is not a new phenomenon to the people nowadays. Developments in information technology and telecommunications have set in motion an electronic revolution in the Malaysian banking sector. Starting with the Automated Teller Machines (ATM) in 1970s till the introduction of Internet banking in the year 2000s, electronic banking has become an important product and services provided by the banking institutions including Islamic banks in Malaysia. This study aims to explore the determinants which influence the adoption of e-banking services provided by Islamic banks in Malaysia among Muslim customers. The determinants obtained by the researcher from the previous studies are perceived usefulness, perceived ease of use, security, trust and cost and charges. Findings show that all the determinants have a positive relationship with the e-banking adoption while in term of effects, there are three variables influence the adoption. Out of the three determinants, perceived usefulness is found to give the most influence towards e-banking adoption. Recommendation for the future research is religiosity to be added as one of the determinants to predict adoption of e-banking in Islamic banks.

Keywords: electronic banking, Islamic banking institutions, adoption

ABSTRAK

Perbankan elektronik atau lebih dikenali sebagai e-perbankan bukanlah suatu fenomena yang baru pada masa kini. Dengan perkembangan teknologi maklumat dan telekomunikasi telah mencetus suatu evolusi dalam industri perbankan di Malaysia. Bermula dengan Automated Teller Machines (ATM) pada tahun 1970an sehinggalah kepada pengenalan perbankan internet pada tahun 2000, perbankan elektronik telah menjadi salah satu produk dan perkhidmatan terpenting yang disediakan oleh institusi perbankan termasuklah institusi perbankan Islam di Malaysia. Kajian ini adalah bertujuan untuk menyelidik faktor-faktor yang mempengaruhi penggunaan perbankan elektronik di bank-bank Islam di Malaysia dalam kalangan pelanggan beragama Islam. Faktor-faktor yang diperoleh hasil daripada kajian terdahulu adalah tanggapan kepenggunaan, tanggapan kemudahan, Keselamatan, Kepercayaan dan Cas bayaran. Hasil kajian menunjukkan kesemua faktor yang dikaji mempunyai hubungan yang positif dengan penggunaan perbankan elektronik dalam kalangan pelanggan, tetapi hanya tiga daripada faktor tersebut yang mempengaruhi penggunaan perkhidmatan perbankan elektronik tersebut. Cadangan untuk kajian akan datang agar faktor keagamaan ditambah sebagai salah satu faktor penting dalam menjangkakan kepenggunaan dalam perbankan elektronik di bank-bank Islam.

Kata Kunci: Perbankan elektronik, institusi perbankan Islam, kepenggunaan

ACKNOWLEDGEMENT

In the name of Allah, the Most Gracious, the Most Merciful.

All praises and thanks are due to Allah, the Lord of the Worlds, for all His bounties and blessings. May peace and blessings be unto the Holy Prophet Muḥammad, his Progeny, and his Companions.

First of all, I would like to thank to Allah for the blessing and giving me strength of mind, spirit, ability and guidance for me to go through all the journeys in completing this research paper. With the help and permission of Allah, I succeeded in finishing this research paper. Working for this Master's degree is a journey towards accomplishing one of my lifetime objectives, which has been made possible by direct and indirect assistance from various parties.

Many thanks must first go to my supervisor, Dr. Mohammad Azmi Othman for giving me the invaluable guidance, insights, moral support and the direction throughout the whole process of completing this research paper. Secondly, my special appreciation is also due to my respectable advisor, Assoc. Prof. Dr. Abu Bakar Hamed for his professional and untiring guidance from the beginning of the study until the end of this report. His valuable comments, suggestions, academic support and his advice have been instrumental guidance in finalizing this report. I am very indebted to their patience and invaluable advices that inspired me to think positively to finish my research paper. Without their understanding, consideration and untiring advice, this research paper would not have been completed successfully. May Allah compensates both of them for sacrificing time and sharing their knowledge.

Special dedicated to my beloved parents, Mr Zainuddin Che Ya and Mrs Jamaliah Yaacob for their endless supports, loves and cares. To the best brother in the world Hasif, the one who understands my passion, financially supports my study from the starts till the end, thank you ya akhi. Not forgotten my little brother and sister, Hamizan and Hana, thank you for the cheers and smiles. Special appreciation also goes to my dearest committed sisters; Syima, Hanim and Sis Nik Safiah for their encouragements and motivations all the way through the journey. To my dearest devoted sisters; Fatin Syazwani, Faezah Basary and Diana Jamry, thank you for always been there for me, through thick and thin, tears and laugh together. Last but not least to all my dearest fellow friends who never give up giving me support, information and assistance to settle up this research paper. Thank you very much for all and best of luck. A word of thanks also extends to those who have indirectly provided comments and helpful suggestion especially to all respondents of this study. Any other individual whom I have not recognized by name but who gave their support and cooperation, I give my sincere thanks.

May Allah S.W.T reward the kindness of everyone that I mentioned above.

Nur Farrah Ain Zainuddin
Islamic Business School
Universiti Utara Malaysia

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURE

LIST OF ABBREVIATIONS

ATM	Automated Teller Machines
BNM	Bank Negara Malaysia
E-banking	Electronic Banking
GDP	Gross Domestic Product
IBI	Islamic Banking Institutions
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This section briefly give the overview of electronic banking in Malaysia and also the services offered to the customers. This section also will highlight the problem statement of the study, the objectives, the research questions and also the definition of terms used in this research paper.

1.2 Background of The Study

Electronic banking is not a new phenomenon in these modern days. Utilization of the internet with the electronic services such as in banking transaction has widely spread among the people. Payment system in Malaysian banking industry has become more efficient with the utilization of the available technology. It was revealed that Malaysia is one of the countries that has evolved from the evolution of currency notes and coins to the cashless and also paperless payment systems of the digital era. (Bank Negara Malaysia, 2013)

However, it remains a high user of cheque and cash despite the progress that has been achieved in the electronic payment infrastructure and the increasing sophistication of the Malaysian economy. (Deputy Governor BNM, 2013)

Deputy Governor of BNM in his speech at the Payment System Forum 2013 dated 9th December 2013 said that the migration to electronic payment systems and channels has become very important along with the rapid technological advancements and increasing demands for more efficient payment services. According to him, study has recommended that a successful migration to electronic payments has the potential to drive further efficiency gains and cost savings of about 1% of Gross Domestic Product (GDP) annually yet to realize the benefits, it requires more enhancements in payment infrastructure and a change of behaviour from users of payments systems.

Electronic banking or e-banking in these modern days is the facilities offered by financial institutions whereby the customers do not need to visit the banking branches to perform their financial transactions. Otherwise, these transactions could be done through electronic system set up by the banks for instance Automatic Teller Machines (ATM) facility. Electronic banking in Malaysia consists of mainly credit and debit card systems and also included the ATM network, interbank giro system, the stored value card, the securities and derivatives and the settlement systems.

Since the technology becomes one of the important attraction to the customers, most of the financial institutions including the Islamic banking institutions nowadaysare motivated to increase their promotional efforts to retain their loyal customers. In regards of the highly competition to e-banking, banks would rethink their commitment to information technology towards gaining competitive advantages (Tan & Thompson, 2000).

1.2.1 Electronic Banking in Malaysia

Revolution of electronic banking in Malaysia began since 1970s with the computerization of financial institutions. But it comes into existence among the customers in 1981 with the presence of the Automated Teller Machines (ATM) offered by banking institutions (Sohail and Shanmugham, 2003). The increasing volume of the banking transactions motivated banking institutions in Malaysia to introduce the use or application of computer in performing financial activities. Next, in linking up with the technological developments in telecommunications and Information technology (IT), there came into existence the real-time on-line electronic funds transfer in the banking industry (Sohail and Shanmugham, 2003).

After that in early 1990s, electronic banking again gone through the emergence of AVR or Automated Voice Response technology for banks to offer tele-banking facilities for financial services. According to Guru et. al (2000), tele-banking is a form of virtual banking of a branch banking services by telecommunication devices in which the customers can perform their financial transaction through dialling a touch-tone telephone or other mobile communication unit. At this stage, customers can perform almost all ATM functions except cash deposit and withdrawals.

In the year 2000, Bank Negara Malaysia has allowed all the domestic banking institutions to offer a full range of internet banking facilities. However, this is subject to the compliance of guidelines issued by BNM. There are several financial activities which can be done via internet banking such as account balance summary, request for account statements, funds transfer, payment facilities and cheque book request services (Bank Negara Malaysia).

Assistant governor of BNM, Abu Hassan Ashari Yahaya in his speech on e-banking fraud awareness campaign on 15th January 2013 stated that customers in Malaysia are confident to use electronic banking as more than 300million financial transactions valued at close to RM15 trillion performed in the year 2012. He added, internet banking was found to be the most popular among the transactions done through various electronic channels. It is recorded the usage of e-banking over the last decade had increased at 23.4% of average annual rate. (www.theedgemalaysia.com)

Malaysia with the banking population of 92% where approximately 70% of them are internet banking subscribers. It is recorded that the subscribers have switched to the adoption of electronic banking to perform their financial transactions. Besides that, the household broadband penetration rate in Malaysia has also increased significantly from 32% in 2009 with the introduction of check processing through electronic to 67% as at end-Sept 2013. (Bank Negara Malaysia, 2013)

From the above facts, the researcher noticed that electronic banking in Malaysia has been widely spread among the customers as the technology make people's life easier. The usage of e-banking are growing along with the technology development in the banking industry. People tend to adopt e-banking as it is more convenient, fast and can be done from anywhere. Hence, banking institutions included Islamic banks nowadays are competing to serve better in e-banking services.

1.2.2 Electronic banking services

Electronic banking provides banking products and services through the electronic channels as mentioned earlier for instance through the ATM, using Internet Banking facilities, Mobile Banking services and also using the credit card. The summary of e-banking services offered by Islamic banks in Malaysia are shown in Table 1.1 below.

Table 1.1: Summary of e-banking services offered by Islamic banks

No	E-banking services offered	Islamic banks
1.	ATM	*All Islamic banks offer this service.
2.	Internet Banking	1. Al Rajhi Banking & Investment Corporation (Malaysia) Berhad 2. AmIslamic Bank Berhad 3. Bank Islam Malaysia Berhad 4. Bank Kerjasama Rakyat Malaysia 5. Bank Muamalat Malaysia Berhad 6. HSBC Amanah Malaysia Berhad 7. Kuwait Finance House (M) Berhad 8. RHB Islamic Bank Berhad
3.	Mobile Banking	1. Al Rajhi Banking & Investment Corporation (Malaysia) Berhad 2. Bank Islam Malaysia Berhad
4.	Credit Card	1. AmIslamic Bank Berhad 2. Bank Islam Malaysia Berhad 3. Bank Kerjasama Rakyat Malaysia Berhad 4. CIMB Islamic Bank Berhad 5. HSBC Amanah Malaysia Berhad 6. Maybank Islamic Berhad 7. RHB Islamic Bank Berhad

Source: Bank Negara Malaysia

- Automated Teller Machine (ATM)

Automated Teller Machines (ATM) is unmanned, automated teller devices, located either on or off bank premises, which are capable of dispensing cash and handling routine financial transactions. The ATMs service can provide 24-hours access to routine banking transactions such as deposits, cash withdrawals, transfer between accounts, and loan repayments. The use of ATM for such routine transactions frees the teller for more specialized services and should, over the long run, reduce the costs of delivering financial services to the customer. Furthermore, the ATM represents an effort by the banks to bring their services to the people. It gives benefits to consumers through its ability to increase time and convenience place for routine banking functions of obtaining cash and making deposits. On the other hand, the benefits to the banks such as the ATM offers a more cost-effective means of delivering these routine functions and frees branch personnel for selling services with a greater return.

ATM can be seen as the most visible form of e-banking in the Malaysian Banking sector. In addition, most of the banking institutions have their own proprietary ATM networks. In order to improve their services to the customer, they have established three ATM switches that were then connected to each others. Malaysian Electronic Payment System Sdn. Bhd. (MEPS) become the merged entity to consolidate and operate the networks and with the mergers. Malaysia has become more efficient in using the resources for the banking institutions. As at the end of 2010, there are 40 banking institutions offering e-banking services where 20 of them are Islamic banks

consists of domestic and foreign Islamic banks. Overall branches are 4,108 units with 9,436 ATM machines located on and off branches (Bank Negara Malaysia).

- Internet Banking

Internet banking is one of the e-banking services offered by the banking institutions. It is an emerging technology that allows the conduct of banking transactions through the internet. It is also refers to the systems that enable bank customers to access accounts and general information on products and services through a personal computer or other intelligent device. Other than that, internet banking products and services can include wholesale products for corporate customers as well as retail and fiduciary products for consumers. (Carr, 2008)

Most of the banks are currently upgrading and improving their website for internet banking as the users are increasing by years. With the technology and modern devices nowadays, people tend to perform their financial transactions by only using their devices. The most popular transactions done by the customers via internet banking are such as funds transfer, loan and bill payments, remittance, mobile prepaid reloads and others. Internet banking not only can be used by the retail customers but also available to the corporate customers. Based on Table 1.1 there are eight Islamic banking institutions which offer internet banking services to their customers. The number of internet banking subscribers increased by 15% in 2012 from 2011. It shows people are getting aware of this service offered by the banking institutions. (Bank Negara Malaysia)

- Mobile Banking

Some banks are making important investments in mobile systems to deliver a range of types of business value. This can be seen from increased efficiency and cost reduction, to improved operational effectiveness and customer service to provide a competitive advantage for them. It was found that the factor that has contributed to this development is the extended availability and capacity of mobile communications infrastructure worldwide. Due to the rapidly increasing number of types of mobile devices and the functionality available that has also improving lead to the adoption of mobile banking among the customers. (Shah and Clarke, 2009)

Mobile banking is quite similar with electronic banking except it is more on to mobile technologies for instance SMS (Short Messaging Service), (WAP) wireless application protocol and JAVA client. For instance, Bank Islam Malaysia Berhad (BIMB) provides TAP Mobile Banking-I which include prepaid top-up service, alerts notification, the savings account balance inquiry, current account balance inquiry, bill payment and fund transfer. The most common channel used to perform financial activities is by SMS. As listed by BNM on their website, there are currently only two Islamic banking institutions offering mobile banking services. Statistic in 2010 shows that 4.9million mobile payment transactions were recorded compared to only 0.3million transactions in 2006. In addition, the number of subscribers rapidly increasing to 8.3million in 2012 than 5.4million in 2011. (Bank Negara Malaysia)

- Credit Card

Credit card is a card based payment mechanism used in Malaysia and widely offered by the banking institutions. The institutions which get the approval from BNM are allowed to issue credit cards in Malaysia. The credit card issuers are subject to the guidelines on credit card operations issued by BNM which include the following requirements:

- The minimum age for the principal card holder shall be 21 years old;
- Minimum income requirement of MYR1,500 (USD395) per month or MYR18,000 (USD4,736.8) per annum;
- Minimum monthly repayment of 5% of the outstanding balance; and
- The maximum finance charge shall be 1.5% per month or 18% per annum.

It was found that the function of credit card that provide cash advance facility, most Malaysian credit card holders use credit cards for payment purposes, represent 85% of the total credit card transactions. The usage of credit card in 2008 was increasing until 2009 but then it keeps declining started from 2010 till 2012 because of fraudulent issues. (Bank Negara Malaysia, 2013)

Table 1.1 shows there are seven Islamic banks issued credit card services to the customers. Credit card offered by Islamic banks is purely Shariah compliant where there is no riba or interest involved in the transaction. The underlying principle used in this service is usually Tawarruq.

.

Technology Acceptance Model (TAM) has been widely used in the technology acceptance research to explain and predict particular technology adoption among users. This study adapted TAM as to predict customers adoption towards e-banking services offered by Islamic banks. TAM was first introduced by Fred Davis in 1989 and it is jointly influenced by two main constructs which are perceived usefulness (PU) and perceived ease of use (PE). He argued that perceived usefulness will directly influenced the behavioural intention. If a certain new technology improves the performance of the users. Potential users will develop a positive intention to adopt it. Furthermore, perceived usefulness is influenced by perceived ease of use. Whenever the technology is free of effort, potential users will realize its usefulness. (Takele and Sira, 2013)

Kondabagil (2007) stated that security and trust have always been essential features of the banking system. Protection of information assets is necessary to establish and maintain the trust between the bank and its customers. These will keep the customers intention to adopt the electronic banking services offered by the banks they patronized. Cost and charges are the related expenses which have to be borne by the users in performing the financial activities using electronic banking. They are included in the cost to perform the transaction such as the internet connection fee and also the charges or fee charged by the bank to their customers. These factors identified through the previous studies that might influence the customers decision to adopt electronic banking in a banking institutions.

Based on the above, this research aims to study on the effect of demographic and the factors influencing e-banking adoption in Islamic banking institutions. Two banks are chosen i.e.; Bank Islam Malaysia Berhad (BIMB) and Bank Kerjasama Rakyat Malaysia Berhad (Bank Rakyat) which focused on Muslim customers in the small towns of Kedah such as Sintok and Changlun. These banking institutions provide products and services which are in accordance with Shariah principles that prohibit charging of the interest. The Technology Acceptance Model was used to predict customers intention to adopt while the other three identified determinants namely security, trust, and cost and charges to the adoption factors have been used to test on the customers.

.

1.3 Problem Statement

Statistic usage of e-banking by Bank Negara Malaysia (BNM) indicates that the payment transactions and cash withdrawals from ATM machines increased with the total volume of 598.9million in 2011 to 612.1million in 2012. While mobile banking service showed a rapid increment of usage in 2012 with the total volume of 59.8million compared to only 13.6million in 2011. The same is true with the usage of internet banking that also increased to 227.3million in 2012 compared to 198.4million in 2011. Overall statistic above shows the increasing of e-banking adoption among the customers consisting of individuals and corporate sectors. However, this statistic does not reflect the usage of e-banking in Islamic banks only as it is comprised of all banking institutions in Malaysia. Thus, this study can actually reveal the small portion of the Muslims e-banking users in the particular research area who are using the services offered by the Islamic banks previously mentioned.

Cheng et. al (2006) emphasized the need to study on factors influencing customers' intention to adopt e-banking services offered so that banks can create their marketing strategies to attract customers' attention towards their products and services. In addition, Poon (2008) suggested a study on e-banking adoption in Islamic banking institutions should be conducted as Islamic institutions mostly banks worldwide in 76 countries hold approximately US$200 billion in the system. Based on these paradoxes, this study attempts to investigate the factors identified influencing e-banking adoption among Muslim customers.

.

1.4 Research Questions

The key research questions to be addressed in this study are as follows:

i. Are there any differences between demographic factors (gender, level of education and occupation type) with e-banking adoption in Islamic banking institutions?

ii. What is the relationship between the determinants (perceived usefulness, perceived ease of use, security, trust and costs and charges) and e-banking adoption in Islamic banking institutions?

iii. Which factors influence the customer adoption towards e-banking in Islamic banking institutions?

1.5 Research Objectives

The main objective of this study is to identify the most influential factors of e-banking adoption among Muslim customers offered by the selected Islamic banks. The main objective of research is then sub-divided into supplementary objective which are the following:

i. To examine the differences between demographic factors and e-banking adoption in Islamic banking institutions.

ii. To explore the relationship between the determinants and e-banking adoption among Muslim customers in Islamic banking institutions.

iii. To examine the factors influence customers' adoption towards e-banking services offered by Islamic banking institutions.

1.6 Significance of Study

This study will focus to examine the factors influencing e-banking adoption among Muslim customers. Thus, it would have the significant contributions as follows:

- To the customers

The usage of e-banking among business customers will ease their life in performing their daily financial transactions. The application also will enhance the effectiveness and efficiency in managing their business where the transactions can be done through the internet which is fast and convenient services are delivered.

Other than that, the cost for going to the branch to do some financial transactions can be reduced and it is actually highly recommended to use the electronic banking services offered rather than to go by traditionally performing finance activities at the branch.

- To the banks

Moreover, assessing the adoption's factor is important because the result will be beneficial for banks to understand the customer's preferences. This which then will then increase their loyalty. The bank management can also strategise accordingly to create the demand for e-banking services. In the fierce competition over customers, providing a unique experience is the compelling element that will retain the customers of a bank.

Other than that, the findings of this study also will assist the banks to attract the high value customers which are expected help to increase the size of revenue streams. For instance in the retail banks, most of the customers are using the electronic channels

regularly for a variety of purposes. For some particular reason there is no need for regular personel contacts with the bank's branch network, which is an expensive channel for banks to run.

With the higher number of users adopting e-banking in Islamic banks followed by the retention of the existing customers and cross selling opportunities, it will result in the increment in the banks' revenue. Thus, the outcome of this study will help the banks to maximize their profit using the technology investment like e-banking channels.

- To the research area

This study attempts to identified the factors which give more influence towards e-banking adoption among Muslim customers. As there is no evidence shows the studies on the particular Muslim customers of Islamic banks have been carried out, then this study make the efforts to test the factors obtained on the Islamic banking institutions.

1.7 Scope of Study

The scope of this study aimed to determine the factors that have more influenced towards e-banking adoption among Muslim customers in the selected Islamic banks. In addition, it will also look into demographic profiles influenced towards the customer's adoption of e-banking. Prior to that, this study will explore the relationship between the factors and the e-banking adoption. This study adapted the Technology Acceptance Model as the main predictors of the adoption combined with a few more factors. The new model was created to test the influence on customers intention to adopt e-banking services.

1.8 Limitation of the Study

There are some limitations discovered in this study. The outcome of this study does not represent all the Muslim customers in Kedah whereas it is only focused on the selected small towns in Kedah namely Sintok and Changlun. In addition, because of there are a few of higher learning institutions nearby the towns, the respondents obtained mostly came from the students. A more extensive study along the same procedures will be necessary if any definite conclusions are to be made. However, due to the time constraint, it is not possible to carry out such an extensive research.

1.9 Organization of Chapters

Chapter 1 briefly explained an introduction, background of the study, and research problem. It then outlines the research questions, objectives, followed by the definition of the key terms and finally, it will present the structure of this research.

Chapter 2 contains the details review of past studies which are related to this research. The review which was presented in this section discussed on the customers' adoption towards e-banking. In addition, this chapter also talked about all the factors that affect e-banking adoption. Finally, the chapter discussed the selected independent variables and presented the research theoretical framework and then hypotheses.

Chapter 3 explained the research method used in this research paper which includes research design of the study, population and sampling of the study, the measurement of the variables used and also the data analysis method.

Chapter 4 discussed on the results of the study. The profile respondents, goodness of measure, descriptive analyses, reliability analysis of the variables and the results of hypotheses tested are presented. Lastly, a summary of results is obtained at the end of this chapter.

Chapter 5 then presented the research findings followed with the discussions. In addition, the implications and limitation of the present study are also discussed. It then goes on with the recommendation for future research and conclusion

1.10 Conclusion

This chapter presented general view about the outline and direction of the research execution. The focus of this chapter is to define the main questions about the research area on the factors that influence Muslim customers adoption towards e-banking in Islamic banks. This chapter contained background of the study, problem statement, research questions and research objectives. In addition, the significant of this study, limitation and organization of the study were also described in this chapter. The next chapter discussed the literature review of the factors that influence the adoption of e-banking among Muslim customers in Islamic banks.

.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, some of the literatures relevant to this study have been explored. Sekaran (2003) stated that a literature review is a documentation of the inclusive reviews from the published work and is obtained from secondary sources of data in the specific areas of the researcher. This section hence will discuss the reviews on e-banking adoption and also the factors contribute to the adoption.

2.2 E-banking adoption

Electronic banking or e-banking provides many facilities or services to their customers. The facilities offered including checking of account balance, fund transfer, pay bills and eventually can reduce the transaction cost as well as establish greater control over bank accounts (Riyadh, Akter, and Islam, 2009). In addition, Mansor et al. (2012) considered e-banking nowadays as one of the fastest forward technologies in the world where transaction of these services enable customers having more flexibility in making payment or other related financial transactions.

Internet banking is part of electronic banking services offered by financial institutions. Yiu et al. (2007) has found a few of the factors that have a positive relationship with the adoption of Internet banking among the retail customers in Hong Kong. The study then suggested that some strategies in the banking service sector could be developed to meet the demands and profile of the market. Sulaiman,

C.H and Wee (2005) viewed e-banking as a service that is increasingly becoming part and parcel of the business environment. Thus, banking institutions especially Islamic banks should be able to appreciate all possible benefits that may derived from the introduction of e-banking facilities to make sure customers adopt the services offered.

On the other hand, there are many factors that have been studied by the previous researchers regarding the e-banking adoption. Poon (2008) tested ten attributes that influenced the customers' adoption in e-banking and all of those attributes have a significant relationship with the adoption. In addition, Alam et. al (2009) in their study revealed that out of the six factors that were tested, there are four factors proven to have significant relationship with the e-banking adoption namely awareness, security, cost and accessibility. While the other two factors which are perceive of use and reluctant to change do not have any significant relation with the e-banking adoption. This is supported by Chong et. al (2010) which found that the factor perceive ease of use did not have a significant correlation with the customers' adoption.

Moreover, perceived behavioral control was found to be a dominant factor than attitude, subjective norm, perceived usefulness, perceived ease of use and also perceived risk in a study conducted by Takele and Sira (2013). Besides, a study conducted among adult customers in India found that trust, security and privacy, innovativeness, familiarity and awareness level affect their acceptance towards e-banking services.

2.3 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) by Davis 1989 has become the foundation of many technology adoption researches. There are two independent variables of actual use of technology that are perceive ease of use and perceive usefulness. Moreover, Davis (1989) defined perceived ease of use as "the degree to which the person believes that using a particular system would be free of effort" while perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her performance". TAM is widely use by the researchers to predict the user acceptance or adoption of information technologies (Salari and Salajegheh, 2011; Kazi, 2013, Takele and Sira, 2013; Chong et. al, 2010; Nasri, 2011; Cheng et. al,2006; Yiu et. al, 2007; Lee, 2009).

On the other hand, there are also other researchers tried to combine TAM with the other theories that can predict the adoption of users towards the technology. For instance, Takele and Sira (2013) combined TAM with Theory of Planned Behavior (TPB) by Azjen (1985) and form other previous studies to examine customers' intention to adopt e-banking services. The results show that the combination managed to predict the customers' intention to adopt with the all variables are found significant to the dependent variables. At the same time, Lee (2009) in his study on online banking adoption also combine the two school of thoughts TAM and TPB as they are the most suitable tools for understanding online banking adoption among the users.

2.4 Discussion of Variables

This section will review the literatures from the past studies on selected demographic factors involved in this study along with the independent variables namely perceived usefulness, perceived ease of used, security, trust and cost and charges.

2.4.1 Demographic Factors

The previous researchers have studied demographic influence towards e-banking adoption among the customers. A study by Poon (2008) found that the different age groups, education level, income level, computer literacy, and also the Internet accessibility at home and or in the office are having significant relationship with the usage of electronic banking. In addition, he added that the young group is found to have more computer literate compared to the others and they are easy to accept and use new technologies.

In a study conducted by Sohrabi (2013) to examine the critical success factors for the customers' adoption of e-banking, male users are found to be slightly higher than female users. While the other studies, male users show high usage percentage of electronic banking services compared to female users (Dixit and Data, 2010; Ismail and Osman, 2012; Takele and Sira, 2013; Kazi, 2013;Tan and Teo, 2000). However, studies by Lee (2009), Sohrabi et. al (2013), Sulaiman et. al (2005) and Cheng et. al (2006) found that the percentage of female users is higher than the male users.

Munusamy (2012) revealed that age and income are negatively related to Internet banking adoption. Moreover, pursuant to his study, it is also found that younger customer are more likely to adopt Internet banking. However, the results on the

relationship of gender, race, education and occupation were not supported in his study.

As for a study of electronic banking adoption in developing countries such as Africa, the adoption of electronic banking especially the Internet banking services is mostly by the white-collar workers and professionals aged 25-50. This study consequently found out that gender, level of education and employment status are the major influence towards e-banking adoption in Africa (Onyia and Tagg, 2012).

2.4.2 Perceived Usefulness and Perceived Ease Of Use

Factors affecting customers' intention to adopt e-banking service channels have been at the forefront of several research works in the developed world. A study to analyze the factors affecting e-banking adoption by Salari and Salajegheh (2011) has found that perceived usefulness is one of the main factors influenced the users to use e-banking services. Previous studies found that the perceived usefulness always has positive influence and relationship towards e-banking adoption among the customers (Kazi, 2013; Takele and Sira, 2013; Chong et. al, 2010; Cheng et. al (2006).

Furthermore, a study conducted in Hong Kong has found that perceived usefulness and perceive ease of use have significant relationship with the adoption of e-banking (Yiu, Grant, and Edgar, 2007). In addition, an empirical study in Vietnam revealed that; perceive usefulness and trust are positively related to the e-banking adoption. However, perceive ease of use was found to be not significant in the studies by Chong et al (2010). Likewise in a study by Alam et. al (2006) which examine the

adoption of internet banking among corporate customers in Klang Valley also found that there is no relationship between perceive ease of use and the e-banking adoption.

2.4.3 Security

Security in electronic services is one of the factors that have significant relationship with e-banking adoption. It means, the higher degree of security on a technology, then the adoption of e-banking among the customers tend to increase. Poon(2008) in his study stated that security and privacy are the two important dimensions that may affect user's intention to adopt e-banking services.

Other than that, security or privacy in term of online banking is a kind of risk which defined by Reavley (2005) as "a potential loss due to fraud or a hacker compromising the security of an online bank user" (Lee, 2009). Lee (2009) then found that the intention to use in online banking services is negatively affected mainly by the security or privacy risk.

Alam et. al (2009) stated security as one of the most important factors in determining customer adoption of e-banking services. In his study, security to be found has a significant and positive relationship with the e-banking adoption.

2.4.4 Trust

According to Johnson et al (2008), trust in technology from the consumer's perspective is not similar to the trust of customers to the general performance. Thus, it is different from the trust to the employee behaviors. Nonetheless, the risk of professional hackers along with the privacy invasion has increased the uncertainty level of some banking facilities offered (Yoon, 2002, Yap et al., 2010). On the other hand, trust has been identified to be widely accepted to predict the adoption in the different studies. In addition, the previous researchers also have indicated constantly that the trust influence adoption of different type of innovation, products and services (Gefen, 2000, Gholami et al., 2010, Sohail and Shanmugham, 2003, Suh and Han, 2003, George, 2002, Liu and Wu, 2007).

Jamshidi and Hussin (2013) then investigate the role of trust in the context of Islamic credit card from the customers' point of view relating to performance as well as the ability of this Islamic service. It is because the trust would allow this product to be recognized as a reliable financial service that does not have any harmful consequences to the customers. Therefore, it would be able to improve different groups of bank customers to apply it in their daily banking activities as well as in purchase transaction (Jamshidi and Hussin, 2013).

2.4.5 Cost and Charges

Cost and charges in performing the financial activities using e-banking services also one of the important factors that influence the customer's intention to adopt these services offered by Islamic banking institutions. Sathye (1999) has identified the costs occurred in the internet banking service which are the first is a normal cost associated with the internet and the second one is the cost and charges by the banks. A study by Alam et. al (2009) shows that cost has positively affects the intention to use internet banking while Sohrabi et. al (2013) found that cost and charges have a moderate correlation level for the e-banking adoption.

2.5 Overall review of variables

Table 2.1: Summary of past studies on e-banking adoption

No	Authors	Model/Theory	Sample size	Factors e-banking adoption	Findings
1.	Analysis of Factors affecting adoption of internet banking. Salari & Salajegheh (2011)	Technology Acceptance Model (Davis, 1989)	247 customers of Mellat Bank	• Perceived usefulness • Perceived ease of use • Trust	▪ Influence the acceptance: - trust, perceived ease of use, perceived usefulness, and attitude and tend to use
2.	Acceptance of E-banking among Adult Customers: An Empirical Investigation in India Dixit & Datta (2010)	-	200 respondents	• Security & Privacy • Trust • Innovativeness • Familiarity • Awareness	▪ Security & privacy, trust, innovativeness, familiarity, awareness level increase the acceptance of e-banking services among Indian customers. ▪ The finding shows that in spite of their security and privacy concern, adult customers are willing to adopt online banking if banks provide him necessary guidance
3.	Factors Influencing the Adoption of E-banking in Sudan: Perceptions of Retail Banking Clients Ismail & Osman (2012)	-	400 respondents, 269 valid response -convenience sampling	Frequent breakdown of ATMs, inconvenient locations of ATMs and Electronic Points of Sale (EPOS), inaccessible internet, lack of means reporting technical problems, unclear legislations protecting e-transactions, slow banks' response for correcting erroneous transactions, weak	▪ Among all e-banking channels, Automated Teller Machine (ATM) is the most popular channel

No	Authors	Model/Theory	Sample size	Factors e-banking adoption	Findings
				banks' role in raising clients' awareness, unclear e-banking guidelines and instructions, frequent power cut offs, and high e-banking service fees"	
4.	Factors Influencing the Adoption of Internet Banking Tan & Teo (2000)	Theory of Planned Behavior & The Diffusion of Innovation Theory	2002 personalized emails sent out, 454 were collected	• Attitude • Subjective norms • Perceived behavioural control	▪ Attitudinal and perceived behavioral control factors, rather than social influence, influencing the intention to adopt Internet banking ▪ Perceptions of relative advantage, compatibility, trialability, and risk toward using the Internet were found to influence intentions to adopt Internet banking services.
5.	An empirical study of factors influencing adoption of internet banking among students of higher education: Evidence from Pakistan Kazi (2013)	TAM (Davis, 1989)	300 questionnaires distributed, 240 were returned -convenience sampling	• Perceived usefulness • Perceived ease of use • Perceived credibility • Convenience	Convenience, perceived credibility, and perceived usefulness had significant positive influence among students on the intention to adopt Internet banking

No	Authors	Model/Theory	Sample size	Factors e-banking adoption	Findings
6.	Analysis Of Factors Influencing Customers' Intention To The Adoption Of E-Banking Service Channels In Bahir Dar City: An Integration Of TAM, TPB And PR Takele & Sira (2013)	TAM (Davis, 1989) TPB (Ajzen, 1985) PR (Previous Studies)	211 questionnaires collected -stratified sampling	• Attitude • Subjective norm • Perceived behavioural control • Perceived usefulness • Perceived ease of use • Perceived risk	Attitude, subjective norm, perceived behavioral control, perceived usefulness and perceived ease of use and perceived risk were significant in affecting users' intention to use e-banking service channels
7.	Effects of demographic factors on bank customers' attitudes and intention toward Internet banking adoption in a major developing African country Onyia & Tagg (2011)	TPB (Ajzen, 1985)	317 response from 500 target sample size -convenience sampling	Demographic factors • Age • Gender • Education • Marital status • Employment status • Income level • Area of residence	▪ All factors correlated ▪ Only gender, level of education and employment status showed significant ability to influence customer
8.	Adoption of Retail Internet Banking: A Study of Demographic Factors Munusamy & Run (2012)	-	207 usable response obtained out of 300 questionnaires distributed	• Gender • Race • Income • Educational level • Occupation	▪ Only age supported the hypothesis ▪ Age affects internet banking adoption
9.	Online banking adoption: an empirical analysis Chong et . al (2010)	TAM (Davis, 1989)	103 usable samples out of 156 respondents -random sampling	• Perceived usefulness • Perceived ease of used • Government support • Trust	▪ Perceived usefulness, trust and government support all positively associated with the intention to use online banking in Vietnam. ▪ Perceived ease of used not significant

No	Authors	Model/Theory	Sample size	Factors e-banking adoption	Findings
10.	Users' adoption of e-banking services: the Malaysian perspective Poon (2008)	-	Out of 500, 324 usable responses received -Convenience sampling	• Convenience of usage • Accessibility • Features availability • Bank management and image • Security • Privacy • Design • Content • Speed • Fees and charges	▪ All elements are significant Privacy, security and convenience factors play an important role in determining the users' acceptance of e-banking services with respect to different segmentation of age group, education level and income level
11.	Factors influencing the adoption of internet banking in Tunisia Nasri (2011)	TAM (Davis, 1989)	Out of 300, 253 usable responses received -Convenience sampling	• Convenience • Prior internet knowledge • Security perception • Perceived risk • Information on online banking	▪ Convenience, risk, security and prior internet knowledge influence the adoption ▪ Information on online banking did not influence the adoption
12.	Critical Success Factors for the Adoption of e-banking in Malaysia Sohrabi et. al (2013)	-	268 respondent were finanlised -Random sampling	• Trust • Cost • Privacy • Security	• Trust and privacy concern the highest effect towards electronic banking adoption
13.	Adoption of internet banking: An empirical study in Hong Kong Cheng et. al (2006)	TAM (Davis, 1989)	203 usable responses -Random sampling from 1000 customers	• Perceived usefulness • Perceived ease of use • Perceived web security	The results provide support of the extended TAM model and confirm its robustness in predicting customers' intention of adoption of IB.

No	Authors	Model/Theory	Sample size	Factors e-banking adoption	Findings
14.	Corporate Customers' Adoption of Internet Banking: Case of Klang Valley Business Firm in Malaysia Alam et. al (2009)	-	223 usable responses out of 250 questionnaires distributed	• Awareness • Ease of use • Security • Cost • Reluctant to change • Accessibility	▪ Perceive of use and reluctant to change no significant ▪ Awareness, security, cost and accessibility significantly important to the adoption of internet banking.
15.	Factors affecting the adoption of Internet Banking in Hong Kong—implications for the banking sector Yiu et. al (2007)	TAM (Davis, 1989)	150 sample size Systematic sampling	• Perceived usefulness • Perceived ease of use • Perceived risk • Personel innovativeness in IT	▪ All the factors have a positive and significant relationship with the internet banking adoptive.
16.	Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit Lee (2009)	TAM (Davis, 1989) TPB (Ajzen, 1985)	368 usable responses out of 446	• Financial • Security/privacy • Performance • Social • Time risk	▪ Intention to use online banking is adversely affected mainly by the security/privacy risk, as well as financial risk and is positively affected mainly by perceived benefit, attitude and perceived usefulness

2.6 Conclusion

This chapter has covered a review of relevant literature regarding to the concept and definition of e-banking adoption, Technology Acceptance Model, Security, Trust and Cost and Charges. Moreover, the chapter has discussed on the previous studies regarding to the customers intention to adopt, Technology Acceptance Model and the determinants previously mentioned above.

There are two models that are usually used by the researchers to determine the users intention to adopt which are Technology Acceptance Model and Theory of Planned Behaviour (TPB) by Azjen (1991). From the literature reviews, it was found that the TAM more widely used to predict the customers adoption on technology than the TPB.

In addition, there are number of the factors that have been explored contribute to customers' adoption on e-banking. Out of them, the three factors such as security, trust and cost and charges are found to be more appropriate to be carried on to test on the Muslim customers in Islamic banks in this study.

.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research methodology adopted in this study. It starts with research model and research framework together with hypothesis generated from the literature review in the previous chapter. This chapter mainly discusses on the research design, measurements of research variables, sampling design, data collection procedures, measurement development and questionnaire administration as well as elaborates in detail the data analysis procedures.

3.2 Research Design

In this study, cross sectional research design was applied and quantitative research is found to be more appropriate to explain a phenomenon in different culture. The type of this research is applied to collect numerical data and analyze it by using mathematical methods (SPSS software). Quantitative data are usually associated with empirical social scientific approaches to measurement. The principal methodological techniques comprise surveys and experiments. Descriptive analysis in this research is used to determine the frequencies of selected demographic factors. This is because descriptive data has been collected through detailed questionnaires that emphasize on studying accurate profile of the person to explain the relationship of demographic factors and the identified factors contribute to the e-banking adoption in Islamic Banking institutions among Muslim customers. It is found that previous researchers

used the quantitative method to examine the factors of e-banking adoption such as Cheng et. al (2006), Yiu et al, Poon (2008), Alam et.al (2009) and Sohrabi (2013).

The method chosen in this study was self-administered questionnaires. According to Sekaran (2000), the questionnaires are the most useful as a data collection method when large numbers of people are to be reached in different geographical regions. In addition, questionnaires are popular method of collecting data because researchers can obtain data easily, and the questionnaire responses are easily coded. Thus, the Muslim customers which adopting electronic banking services in Bank Islam Malaysia Berhad and Bank Rakyat were requested to answers the questionnaires.

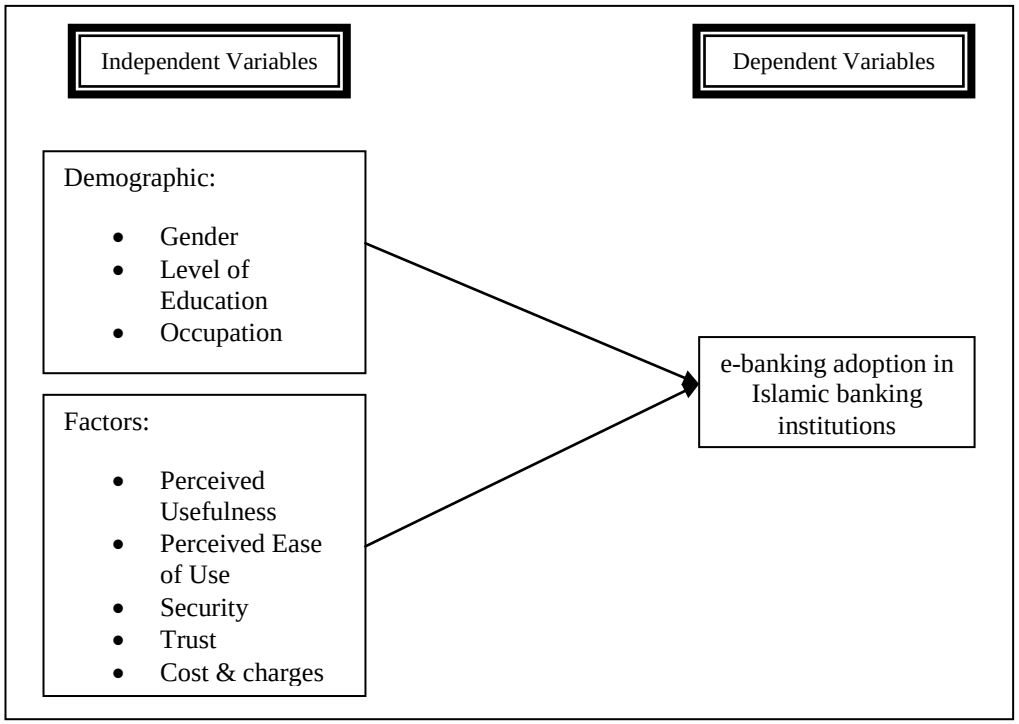
Other than that, the self-administered questionnaires are cheaper and quicker rather than others. They can be distributed all together and it is very effective. The respondents can complete the questionnaires whenever they convenient and able to check the record if necessary. Date collecting is time consuming where it took about one month and a half from middle of October 2013 to December 2013.

.

3.3 The Research Framework

The research framework in figure 3.1 below is adapted from the basis of Technology Acceptance Model (TAM) by Davis (1989). The original TAM consisted of perceived usefulness and perceived ease of use as the main predictors for the attitudes, intention and actual system used. Many previous researchers have adopted this theory in their studies pertaining to adoption of e-banking for instance Cheng et.al (2006), Yiu et.al (2007), Riyadh et.al (2009), Chong et.al (2010) and Nasri (2011). While for the other independent variables which are trust, security and cost and charges, they are adopted from previous studies. Demographic factors were added in this study as to determine their differences towards the adoption. There is a possibility of good exploration with the inclusion of new predictor factors in TAM to understand and investigate the rigorousness of this theory in different context and situation (Davis, 1989).

Figure 3.1 : Theoretical Framework



The operational definitions of constructs contained in the research framework can be seen as below:

1. **Adoption.** The acceptance and continued use of a product, service or idea (Sathye, 1999)

2. **Perceived usefulness.** The degree to which a person believes that using a particular system would enhance his job performance (Davis, 1989).

3. **Perceived ease of use.** The degree to which a person believes that using a particular system would be free of effort (Davis, 1989).

4. **Security.** Circumstance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, modification of data, denial of service and/or fraud, waste, and abuse (Kalakota and Whinston, 1997)

5. **Trust.** Users' thoughts, feelings, emotions, or behaviours that occur when customers feel that the provider can be relied upon to act in their best interest when they give up direct control (Patrick, 2002)

6. **Cost & Charges.** The probability that using the technology of electronic banking would increase the cost associated with performing these services with the Standard Infrastructure and software that is already available (Soroor, 2005)

3.4 Hypotheses Development

This research identified the important variables in a situation and established the relationships among them through logical reasoning in the theoretical framework. It is then in a position to test whether the relationships that have been theorized do in fact, hold true. In this study, two alternative hypotheses have been built that are related to the objective of the study:

Objective 1

To examine the differences between selected demographic factors and e-banking adoption in Islamic banking institutions.

$H_0$1 : There is no significant difference between gender and adoption of e-banking services in Islamic banking institutions.

H_a1 : There is a significant difference between gender and adoption of e-banking services in Islamic banking institutions.

$H_0$2 : There is no significant difference between level of education and adoption of e-banking services in Islamic banking institutions.

H_a2 : There is a significant difference between level of education and adoption of e-banking services in Islamic banking institutions.

$H_0$3 : There is no significant difference between occupation and adoption of e-banking services in Islamic banking institutions.

H_a3 : There is a significant difference between occupation and adoption of e-banking services in Islamic banking institutions.

Objective 2

To explore the relationship between the determinants and e-banking adoption among Muslim customers in Islamic banking institutions.

$H_0$1 : There is no significant relationship between perceived usefulness and adoption of e-banking services in Islamic banking institutions.

H_a1 : There is a significant relationship between perceived usefulness and adoption of e-banking services in Islamic banking institutions.

$H_0$2 : There is no significant relationship between perceived ease of use and adoption of e-banking services in Islamic banking institutions.

H_a2 : There is a significant relationship between perceived ease of use and adoption of e-banking services in Islamic banking institutions.

$H_0$3 : There is no significant relationship between security and adoption of e-banking services in Islamic banking institutions.

H_a3 : There is a significant relationship between security and adoption of e-banking services in Islamic banking institutions.

$H_0$4 : There is no significant relationship between trust and adoption of e-banking services in Islamic banking institutions.

H_a4 : There is a significant relationship between trust and adoption of e-banking services in Islamic banking institutions.

$H_0$5 : Cost and charges do not have any significant relationship with e-banking adoption Islamic banking institutions.

H_a5 : Cost and charges do have any significant relationship with e-banking adoption Islamic banking institutions.

Objective 3

To examine the factors influence customers' adoption towards e-banking services offered by Islamic banking institutions.

H_0 : There is no influence between the determinants (perceived usefulness, perceive ease of use, security, trust and costs and charges) and e-banking adoption in Islamic banking institutions.

H_a : The determinants (perceived usefulness, perceive ease of use, security, trust and costs and charges) positively influence the adoption of e-banking services in Islamic banking institutions.

3.5 Instrument of Measurement

For the purpose of this study, a set of complete questionnaire with the total of 35 items was used to gather the information. The 35-items in questionnaire were divided into three sections. The first section which consists of 7 items to capture demographic information among respondents such as respondent's gender, age, highest educational level, occupation, average monthly income level, users of electronic banking and the electronic banking services which they are currently adopt. The second section is devoted to the factors of e-banking adoption and it includes 24-items correspond to the e-banking adoption dimensions namely security, trust and cost and charges. The last section of the questionnaire that consists of 4-items which is to measure the adoption of e-banking services offered by Islamic banks.

3.5.1 Measurement of demographic factors and e-banking adoption in Islamic banks

This part consists of 7 items to measure the demographic factors and the respondents' adoption in e-banking services in Islamic banking institutions. There are 5 items to capture the respondents' demographic information such as gender, age, highest educational level, occupation and the average monthly income level. Meanwhile there were 2 items to measure the respondents' usage of e-banking in Islamic banks.

3.5.2 Measurement of Technology Acceptance Model

Technology Acceptance Model that was developed by Davis (1989) consists of two components that are perceived usefulness and perceived ease of use. The instrument used to measure the components obtained from the modified version of Internet Banking Adoption Questionnaire by Cheng et al. (2006) and Lee (2009). There were 4 items to measure the perceived usefulness and also 4 items to measure perceived ease of use.

The measurement of Technology Acceptance Model in this study used five-point likert scale to determine the extent of the agreement or disagreement with the statement regarding to the TAM. Rating scale was from "strongly disagree" with a value of 1 to "strongly agree" with a value of 5. A respondent that indicates the score of 1 or strongly disagree represents a very low level of perceived usefulness and ease of use while the score of 5 or strongly agree represents a very high level of perceived usefulness and ease of used.

3.5.3 Measurement of Security and e-banking adoption

The instrument used to measure the security factor towards customers' adoption in e-banking offered by Islamic banking institutions was originally adopted from Poon (2008). The total 5-items is used to measure the factor also using the five-point likert scale measurement. Rating scale was from "strongly disagree" with a value of 1 to "strongly agree" with a value of 5. A respondent that indicates the score of 1 or strongly disagree represents a very low security influence towards e-banking adoption while the score of 5 or strongly agree represents a very high level of security influence towards the adoption.

3.5.4 Measurement of Trust and e-banking adoption

The instrument used to measure the next factor that is trust is adopted from Sohrabi et al. (2003). The total 6-items were used to measure the factor using the five-point likert scale measurement. Rating scale were from "strongly disagree" with a value of 1 to "strongly agree" with a value of 5. A respondent which indicates the score of 1 or strongly disagree represents a very low trust influence on the electronic banking services delivered towards e-banking adoption while the score of 5 or strongly agree represents a very high level of influence of trust towards the adoption.

3.5.5 Measurement cost and charges towards e-banking adoption

For the factor of cost and charges influence towards e-banking adoption, there were 5-items have been used. Using the five-point likert scale measurement, the rating scale was from "strongly disagree" with a value of 1 to "strongly agree" with a value of 5. A respondent which indicates the score of 1 or strongly disagree represents a very low cost and charges influence towards e-banking adoption while the score of 5 or strongly agree represents a very high level of influence of cost and charges towards the adoption.

Table 3.1: Summary of measurement of variables

No	Variables	Items	Measurement adopted from	Validity
1.	Independent Variables			
	• Perceived Usefulness	4 items	Cheng et al (2006)	Validated
	• Perceived Ease of Use	4 items	Lee (2009)	Validated
	• Trust	6 items	Sohrabi et al (2013)	Validated
	• Security	5 items	Poon (2008)	Validated
	• Cost and Charges	5 items	Poon (2008)	Validated
2.	**Dependent Variables**			
	• E-banking adoption	4 items	Poon (2008)	Validated

3.6 Reliability Analysis

In order to prove the internal reliability of the model used, the researcher performed Cronbach's Alpha Test of Reliability. Reliability is defined as consistency, which is the degree of intercorrelation among the items (internal consistency) that measures the same concept. Thus, according to Sekaran (2000), Cronbach's alpha can be considered as a perfectly adequate indication of the internal consistency and then also the reliability. Nunnally and Bernstein (1994) stated that a-score which exceeding 0.7 shows the high internal reliability of the scale items. However, they are still other researchers who use different cut off a-scores like 0.8 or 0.6 (Garson, 2002).

Table 3.2 : Reliability Test

Variables	Cronbach's Alpha Values
Perceived usefulness	.919
Perceived ease of use	.895
Security	.900
Trust	.884
Cost and Charges	.858
Customers' Adoption	.904

(Please refer to Appendix B for details output)

The previous table above shows that the result of cronbach's alpha are 0.919, 0.895, 0.900, 0.884, 0.858, 0.904 for perceived usefulness, perceived ease of use, security, trust and cost & charges and customer's adoption respectively. Based on the table above, we can see that all the variables measured above have Cronbach's Alpha above than 0.7 means that all the dimensions are reliable and the items pertaining to each of these dimensions can be used to measure the construct to which they pertain.

3.7 Data collection and research procedures

This section will discuss on the data collection method and research procedures that has been carried out for the purpose of the study.

3.7.1 Population and Sample of The Study

According to Zikmund (2000), population can be defined as a complete group of entities that sharing some common set of characteristics or features. In this research, population is the total category of subjects that is the focus of attention on a particular research project. The target population that employed in this research will be the Muslim customers who are using the electronic banking services in Kedah. The sample of the population then focused in Changlun, a small town in the Kubang Pasu district. Located in about 42km north from Alor Star and 8km near Bukit Kayu Hitam, Changlun is the main border between Thailand and Malaysia. The main reason researcher chooses Changlun as the population because this small town is developing rapidly due to increasing of demand among local communities and also the students of higher learning institutions nearby such as Kolej Matrikulasi Kedah, Universiti Utara Malaysia, Akademi Binaan Malaysia and others. From a small town that barely has the visitors Changlun now has expanded with more facilities to the community for instance there are more franchises have been opened like Kopitiam, Merry Brown, KFC and recently followed by Pizza Hut. So do with the banking facilities since there are increasing in number of visitors, the banking institutions also see the developments as the opportunities for them. As the result, one of banking institutions that is Maybank Islamic Berhad has been operating their new branch in Changlun early in this year.

3.7.2 The Sampling Method

As stated by Creswell (2008), a sample is a subgroup of a target population studied for the purpose of generalizing about the target population. Sampling involves any procedure that uses a small number of items or those user's parts of the population to make a conclusion regarding the whole population. According to the Statistic Department of Malaysia, the total Muslim population in Kedah as at end 2010 is about 1,504,00. There are only two small towns in Kubang Pasu district of Kedah namely Sintok and Changlun were selected in this study as the sample of population. However, the researcher could not determine the exact population figure of Muslim customers for this study as the statistic does not contain the figure of population in the small towns stated. Sathye (1999) in determining sample size of his study, quoted from Alreck and Settle (1985), "For the populations of 10,000 and more, most researchers would probably consider a sample size between 200 and 1000 respondents". Therefore, researcher of this study has decided to set a minimum of 300-sample size of Muslim customers that are using the electronic banking services in Bank Islam Malaysia Berhad and Bank Kerjasama Rakyat Berhad in Changlun and Sintok, Kedah. In addition, the respondents in this study are from different demographic composition.

3.7.3 Data Collection

In order to collect the data, this study selected every three Muslim customers who visited the ATM (Automated Teller Machines) branches of BIMB and Bank Rakyat in Sintok and Changlun. This questionnaire then administered face to face.

3.8 Data Analysis

The data gathered in this study will be analyzed by using descriptive and inferential methods. Descriptive methods will be used to interpret data in general while inferential methods will be used for the purpose of hypothesis testing. All the primary data in this study will be processed using by Statistical Package for Social Science (SPSS) Version 20 in order to answer the research questions and also to achieve research objectives of this study. Before that, the normality testing and outliers of data were tested to validate the data collected can be used for the analysis using SPSS. In addition

3.8.1 Normality of the Data

Hair et al. (1998) suggested that normality of data is perceived as fundamental one in a research conducted especially multivariate research. According to Pallant (2001), normal is used to describe a symmetrical bell shape curve which has the greatest frequency of scores in the middle with smaller frequencies towards extreme. The assumption of normality is a prerequisite for many inferential statistical techniques (Coakes and Steed, 2007). If the variation from the normal is sufficiently large, all resulting statistical test are invalid because normality is required to use the F and t statistic (Hair et al., 2006).

Normality also can be assessed to some extent by obtaining skewness and kurtosis values. Normal distribution describes the expected distribution of sample means as well as many other chance occurrences (Hair et al, 2007). The normal distribution is particularly important because it provides the underlying basis for many of the inferences by researcher who collect data using sampling. Therefore, in this study, a

researcher runs a normality test to make sure the normality of distribution and checking for outliers.

For the purpose of this study, all the independents variables were tested by using SPSS to ensure no violation of normality assumption using the explore procedure under SPSS (see Appendix B). Through normality test, the outliers were removed from the analysis. According to Hair et al. (2007), an outlier is a respondent that has one or more values that are distinctly different from the values of others respondents. Outliers also can impact the validity of the researcher's findings. Thus, the researcher eliminated the specific respondents to avoid distorting or misrepresenting the findings. Therefore, after removed the outliers, the results for normality can be accessed using the graphical analysis and statistical test of normality.

The first medium to acknowledge the normality of the data is using the graphical analysis. According to Hair et al. (2006), the most reliable approach to measure the normality of the data under graphical analysis is using the normal probability plot, which compares the cumulative distribution. The normal distribution forms a straight diagonal line and the plotted data values are compared with the diagonal. If the distribution is normal, the line representing the data distribution closely follows the diagonal. From the normal Q-Q Plot of all the variables, almost all the data distributions were plotted closely follows the diagonal (see appendix B). Thus it can be concluded that the data used in this study did not violate the normality assumption for the inferential analysis.

The second medium to acknowledge the normality of the data is using the statistical test of normality. According to Hair et al. (2006), a simple procedure for this test is based on the skewness and kurtosis value which available from the statistical programs. Skewness and kurtosis refer to the shape of the distribution and are used with interval and ratio level data (Coakes and Steed, 2007). In the most programs, the skewness and kurtosis of a normal distribution are given values of zero. Then, values above or below zero denote departures from normality. According to Coakes and Steed (2007) Positive values for skewness indicate a positive skew while positive values for kurtosis indicate a distribution that is peaked (leptokurtic). Negative values for skewness indicate a negative skew while negative values for kurtosis indicate a distribution that is flatter (platykurtic). While according to Hair et al (2003), if the skewness values are larger than +1 or smaller than -1 this shows a substantially skewed distribution. For the kurtosis, a curve is too peaked when the values exceed +3 and is too flat when it is below -3. The result of normality test is shown in the Table 3.3 below.

Table 3.3 : Summary of the Skewness and Kurtosis Values of the Variables

Variables	Skewness	Kurtosis
Adoption	-.548	.338
Perceived Usefulness	-.853	1.076
Perceived Ease of Use	-.812	1.204
Security	-.995	1.398
Trust	-.793	.667
Cost & Charges	-.746	.527

(Please refer Appendix B for details output)

3.9 Descriptive Statistic Analysis

To obtain the respondents' profile, descriptive analysis is performed. In addition, descriptive analysis is also used to illustrate the mean and standard deviation for the adoption and determinants of e-banking adoption. According to Hair et al. (2007), the standard deviation describes the spread or variability of the sample values from the mean. If the value of standard deviation is small, therefore the responses in a sample distribution of number fall very close to the mean. Frequencies are used to obtain the respondents' profile statistics and details on the e-banking adoption among Muslim customers in Islamic banking institutions.

3.10 Inferential Statistic

Inferential statistic is used to infer from the data through analysis. This study used independent t-test, one-way ANOVA, correlation and multiple regressions to analyze the data.

3.10.1 Independent T-test

T-test is normally used to test or to compare the differences between two means of two related groups in order to detect whether there is any statistically significant differences between the means. In this study, t-test is used to analyze the differences between gender (male / female) towards e-banking adoption with other independent variables involved.

3.10.2 Assumption testing of Independent T-test

According to Coakes (2013), each statistical test has certain assumptions that must be met before analysis of data. These assumptions need to be evaluated because the accuracy of test interpretation depends on whether assumptions are violated. The generic assumptions underlying all types of t-test as said by Coakes (2013) are firstly the data should be at the interval or ratio level of measurement. Second is the scores should be random sampled from the population of interest and the scores should be normally distributed in the population. There are two additional assumptions for the independent t-test which are the participants should appear in only one group and these group should be unrelated and the other one is the groups should come from the populations with equal variances. For the purpose of this study, independent t-test is applied in order to test the differences between gender namely male and female towards e-banking adoption in islamic banking institutions.

3.10.3 One-way ANOVA

According to Hair et al (2003), analysis of variance is used to assess the statistical differences between the means of two or more variables. This study applied One-Way ANOVA test to examine the differences among at least three groups or more than two groups.

3.10.4 Assumption testing on ANOVA

Before conducting the ANOVA, the necessary assumptions must be met. The assumptions for ANOVA according to Coakes (2013) are the same as those for t-test. The assumptions are first is the populations from which samples have been drawn should be normal and the second one is the scores in each group should have

homogeneous variances. This test was applied on hypothesis two which to find the relationship between level of education and e-banking adoption among Muslim customers.

3.10.5 Correlation

The Pearson correlation measures the linear association between two metric variables (Hair et al, 2003). In addition, it is used to examine whether there is a relationship between the dependent and independent variables as well as indicates the strength of the relationship.

3.10.6 Assumption testing on Correlation

The correlational analysis assumptions according to Coakes (2013) are firstly the data must be collected from related pairs for instance if we obtain a score on an X variable, there must also be a score on the Y variable from the same participants. Then the data should be interval or ration in nature and the scores for each variable should be normally distributed. Other than that, the relationship between two variables must be linear. Last but not least, the variability in scores for one variable is roughly the same at all values of the other variables. We use the correlation to test the hypothesis on relationship between the factors namely perceived usefulness, perceived ease of use, security, trusts and cost and charges with the e-banking adoption in Islamic banking institutions.

3.10.7 Multiple Regression

Multiple regression is a method that frequently used in a data analysis to analyze data when there involved several independent variables with one dependent variable. In addition, multiple regression can help the researcher to understand how much variance in the dependent variable that being affected by the independent variables.

3.10.8 Assumption on Multiple Regression

According to Coakes (2013), there are four main assumptions underpinning the use of regression. The first assumption needed in regression is the ratio of cases to independent variables. The number of cases needed is should ideally have twenty times more cases than predictors and the minimum requirement is to have at least five times more cases that independent variables. According to this study, there are five independents variables and the number of respondents is 261 Muslim customers which indicate around 50 times more cases than independent variables. Hence, there is no violation for this assumption.

The second assumption for regression is outliers. The situation whereby there is extreme cases that considerable impact on the regression solution and should be deleted or modified to reduce their influence. For the multivariate analysis technique, the outliers can be deleted using statistical methods such as Mahalanobis distance and graphical methods such as residual scatter plots. The Mahalanobis distances can help in indicating outliers in the data. According to Tabachnick and Fidell (1996), the critical value of Mahalanobis for five independent variables (df=5) at $p< 0.01$ is 20.52.

Table 3.4 : Critical value for Mahalanobis at p<0.01

d*f*	Critical Value (at p<0.01)
1	10.83
2	13.83
3	16.72
4	18.47
5	20.52

Source: Adapted from http://en.wikiversity.org/wiki/Mahalanobis'_distance.

From the table of residual statistic under regression analysis, the maximum Mahalanobis distances in this study is 35.67 (see appendix E). Consequently, cases with a Mahalanobis distance greater than 20.52 are considered outliers and the cases are most appropriately deleted.

The third assumption in regression is multicollinearity. Multicollinearity refers to high correlations among the independent variables. Multicollinearity is a matter of degree, not a matter of presence or absence where the higher the degree of multicollinearity the greater the likelihood of the disturbing consequences of multicollinearity. According to Hair et al. (2006), the most common measures for assessing multicollinearity are tolerance and variance inflation factor (VIF). Tolerance is defined as the amount of variability of the selected independent variable not explained by the other independent variables. Tolerance value should be high which means a small degree of multicollinearity. Meanwhile, VIF translates the tolerance value, which directly expresses the degree of multicollinearity, into an impact on the estimation process. According to Hair et al. (1998), multicollinearity

test is aimed to test whether in the regression model; there is correlation among independent variables by analyzing the following:

1. If there is low level correlation among independent variables (usually less than 0.90) it is suspected that there is no multicollinearity.

2. If value of tolerance is greater than 0.1, and value of variance inflation factor is lower than 5 (VIF< 5), it means this variables may not produce multicollinearity problems.

From the statistics, value of tolerance indicated that variable could not produce multicollinearity problems since the result of variance in the range of 0.23 to 0.57 (see appendix E).For the value of VIF, it indicates that VIF value for all variables ranging from 1.77 to 4.45 (see appendix E). Since all of the tolerance value is greater than 0.1, and the VIF is less than 5, it can be concluded that, all the variables do not indicate a problem with multicollinearity.

Last assumption in regression is linearity, normality, and homoscedasticity. Hair et al (1998) describes that the linearity of the relationship between independent and dependent variables represents the degree to which the change in dependent variable is associated with the independent variables. The linearity is easily examined through residual plots and figure shows that the plot of residuals falling randomly with relatively equal dispersion (see appendix E). Thus, the data is considered linear. Moreover, it is assumed that the residual have a linear relationship with the predicted dependent variables scores, and that the variance of the residuals is the same for all predicted scores.

According to Hair et al. (2006), the assessment of normality of the metric variables involves both empirical measures of a distribution's shape characteristics (skewness and kurtosis) and the normal probability plots. The assessment of normality has already proved that the data used in this study is normal by using the graphical, skewness and kurtosis value.

In addition, according to De Vaus (2002), if a distribution is normal, the residual line will closely follow the diagonal. Therefore, normal P-P plot of regressions (see appendix E) shows that the plotted residual are closely follows the diagonal. It indicates that the distribution is normal. The value of skewness and kurtosis as computed before also did not exceed the specified critical value and it can be concluded that the distribution is normal.

Furthermore, the test for homoscedasticity that deals with the equality of the variance at all value for dependant and independent variables. From the scatter plot, the shape of the cluster can be considered even from one end to the other. In other words, the score cluster uniformly which indicates that there is no violation of the homoscedasticity assumption (see appendix E).

From the above discussion, it has been proven that all the assumptions were not violated in this study. Hence, the multiple regressions can be used to examine the influence of attitude towards behaviour, subjective norms, perceived behavioural control, emotional intelligence, and students who involve and do not involve in business towards entrepreneurial intention after graduation. The researcher simply expanded the formulation of multiple regressions models as shown below.

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5$$

Where a = Intercepts
Y = E-Banking Adoption
b_1x_1 = Perceived Usefulness
b_2x_2 = Perceived Ease Of Use
b_3x_3 = Security
b_4x_4 = Trust
b_5x_5 = Cost and Charges

For the multiple regression analysis, the R square (R^2) obtained in the multiple regressions indicates the percentage of variance in the dependent variable that can be explained by the independent variables. Since these variables are measures in different units which are nominal, ration and interval scale, Beta coefficient will be used to eliminate the problem of dealing with different units of measurement and they reflect the relative impact on the criterion variable of a change in 1 standard deviation in either variable. Through beta coefficient, the analysis will have common unit measurement and the coefficients tell which variable is most influential. Table 3.5 illustrated the general description of the data analysis in this study.

Table 3.5 : Summary of the data analysis technique

Hypothesis	Test
i) There are significant differences between demographic factors and adoption of e-banking services in Islamic banking institutions.	T-test One-way ANOVA
ii) There are significant relationship between the determinants and e-banking adoption among Muslim customers in Islamic banking institutions.	Pearson Correlation
iii) There are positive influence between the determinants and the customers' adoption of e-banking services offered by Islamic banking institutions.	Multiple Regression

3.11 Conclusion

This chapter has briefly views all parts of the research methodology applied in this study. The researcher has described how the research approach adopted in the study, providing the details in research subjects based on population and size sample, about the questionnaires and how the questionnaire will be administered. The data collected then has been analyzed using SPSS Version 20.0 and the results of statistically analysis are explained in the next chapter that is Chapter 4.

CHAPTER FOUR

DATA ANALYSIS

4.1 Introduction

In this chapter, the researcher will present the results of the data analysis. The process of analyzing the data is done by using descriptive and inferential analysis. Thus, the results are divided into two sections below:

1) Results on descriptive statistic analysis

2) Results on inferential analysis

The results gathered from the descriptive statistic analysis in this study included those relating to demographic characteristics of respondents and also their usage of electronic banking services offered by Islamic banking institutions. Meanwhile, the results for inferential analysis present hypotheses testing using T-test, ANOVA, correlation and multiple regressions analysis.

4.2 Overview of Data Collected

This section then will present the analysis of data collected for the study.

4.2.1 Response Rate

For the data collection purposes, about 300 self-administered questionnaires were distributed to the Muslim customers in Changlun and Sintok, Kedah. Out of 300 questionnaires sent, 261 responses received and resulting 87% response rate.

4.2.2 Descriptive Statistic Analysis

In the descriptive analysis, the researcher conducted to explore the data and also describes the observations or an overview of the sample data that has been collected. It will explain the demographic profile of the respondents and observation of the variables.

4.2.2.1 Profile of the Respondents

This is the initial step to get the overview of the demographic information from the respondents. The profile of the respondents is important to determine the trend of e-banking customers in Islamic banks towards the pertaining problem. The demographic variables are included gender, age, level of education, occupation, income, and users in Islamic banks. Table 4.1 in the next page presents the profile of respondents in this study.

Table 4.1: Profile of the respondents

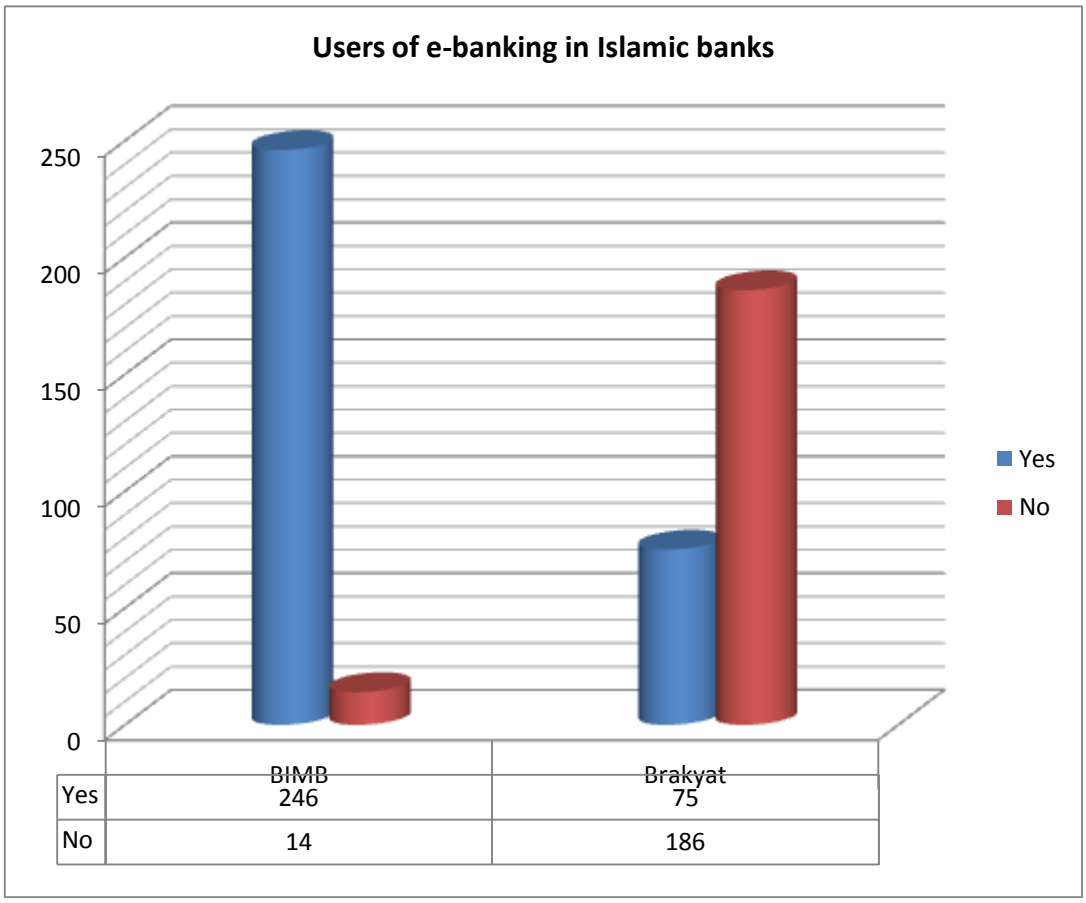
Variable	Categories	N	(%)
1.Gender	Male	119	45.6
	Female	142	54.4
2.Age	Below than 25	74	28.4
	25-35	101	38.7
	36-50	83	31.8
	51 and above	3	1.1
3.Education	Primary	6	2.3
	Secondary	19	7.3
	STPM & equivalent	45	17.2
	Diploma & equivalent	144	55.2
	Bachelor & Master	41	15.7
	Others (PhD)	6	2.3
4.Occupation	Government	66	25.3
	Private	26	10
	Self-employed	43	16.5
	Student	126	48.2
5.Income	Below RM1500	115	44.1
	RM1500-RM2999	61	23.4
	RM3000-RM4999	72	27.6
	RM5000-RM6999	9	3.4
	RM7000 and above	4	1.5

From table 4.1 above we can see the distribution of the questionnaires of the respondents almost equal in gender. It indicates 45.6% of male answer the questionnaires while female with 54.4%. The slightly different in the frequency shows the adoption of Muslim customers towards e-banking in Islamic banks either Bank Islam Malaysia Berhad (BIMB) or Bank Rakyat or both of them together.

Based on the table above we also can see the highest percentage in the age category is between 25-35 with 38.7% followed by age category 36-50 with 31.8%. It explains the adoption of e-banking in Islamic banking institutions is mostly from the youngster. Past studies found that the young category age has the technology savvy that lead them to the adoption of something related to the technology.

It also found that 144 from the 261 respondents are diploma and equivalent certificates holder that explained the highest occupations are the students. Since the population was selected in Changlun and Sintok, Kedah it was expected that most of the respondents will be the students from the higher learning institutions nearby. It indicates 47 % from the respondents are the students followed by the government servants with 25.3% and self-employed customers with 16.5%. While the income of the respondents shows that 44.1% from them having income below RM1500. There are 61 respondents having income between RM1500 –RM 2999 and 72 of the respondents earn RM3000 – RM4999.

Figure 4.1 : Users of e-banking services in Islamic banks



Based on the chart above, most of the respondents in this study are users of e-banking in Bank Islam Malaysia Berhad (BIMB) with 94.3% or 246 respondents and only 5.4% are not using e-banking services provided by the bank. Other than that, there are 75 of respondents using the e-banking services provided by Bank Rakyat and about 186 of respondents are not using the e-banking services. The above discussions briefly indicate that the sample of this study does not diverge significantly from the general population of e-banking customers and it is therefore deemed representative of the population.

4.2.2.2 Observation of the variables

Descriptive analysis has been used to analyze the adoption of e-banking, perceived usefulness, perceived ease of use, security, trust and also the cost and charges. This is also being used to identify the situation of each constructs which are dependent and independent variables in the form of mean and standard deviation. The mean values of the variables were obtained by the measure on a five Likert scale, which means the greater the number of the five point scale, the greater the goodness of the variable will be. The values which are nearer to five are considered better, while the values close to zero are considered bad. In addition, a mean value equal or more than 4 indicates a high agreement with a particular criterion which are a mean value equal or less than 2 were considered as low, and a mean value of 3 was considered as a moderate agreement. A descriptive analysis of all six variables is presented in the Table 4.2 below.

Table 4.2 : Level of adoption and factors of respondents to adopt e-banking in Islamic banks

Variables (N=261)	Minimum	Maximum	Mean	Std. Deviation
E-banking adoption	1.50	5.00	3.9416	.72469
Perceived Usefulness	1.00	5.00	3.9004	.83184
Perceived ease of use	1.00	5.00	3.8860	.78825
Security	1.00	5.00	3.9510	.83724
Trust	1.00	5.00	3.8442	.83474
Cost and Charges	1.00	5.00	3.6713	.79922

(Please refer to Appendix D for details output)

Table 4.2 above indicates the minimum, maximum, mean and the standard deviation of the model variables. The mean values of the e-banking adoption, perceived usefulness, perceived ease of use, security, trust and also cost and charges range between 3.7 and 3.9. Consequently, all the values are considered moderate.

The level of e-banking adoption is quite high in moderate with the mean value of 3.94. This figure shows that the customers generally have higher intention to adopt e-banking services offered by Islamic banks is the security level. Nevertheless, it is still depends on the independent variables that have a high agreement towards e-banking adoption.

The highest mean value of independent variables was obtained by the security factor at 3.95, followed by perceived usefulness at 3.90. The lowest mean value is by cost and charges with 3.67 mean value. In the other hand, all the independent variables are considered moderate in mean values. Hence, the respondents perceived usefulness, perceived ease of use, security, trust and the cost and charges in e-banking adoption is considered moderate.

4.3 The Differences Between Demographic Factors and E-Banking Adoption

(a) Differences between gender and e-banking adoption

Hypothesis 1:

H_0 : There is no difference between gender and adoption of e- banking services in Islamic banking institutions.

H_a : There is a difference between gender and adoption of e-banking services in Islamic banking institutions.

Table 4.3 : Differences between gender and e-banking adoption

Variable	Gender	Mean	Standard Deviation	t-value	Significant level
E-banking adoption	Male	3.98	.80	.708	.480
	Female	3.91	.66		

Based on Table 4.3 above, this analysis corresponds to the objective one of this study that is to examine the differences between selected demographic factors towards e-banking adoption in Islamic banking institutions. Therefore, the independent group t-test analysis is conducted to test Hypothesis one in this study. The results indicate the mean of Male users who adopting e-banking in Islamic banks is 3.98 with the standard deviation of 0.80 while mean for the female users is 3.91 with the standard deviation of 0.66. Since the significant level is much lower than the acceptable level of 0.05 (p=0.000), thus the null hypothesis for this test is failed to reject. It can be concluded that there is no significant different between male and female users in adopting e-banking services in Islamic banking institutions.

(b) Differences between level of education and e-banking adoption

Hypothesis 2

H_0 : There is no significant difference between level of education and adoption of e-banking services in Islamic banking institutions.

H_a : There is a significant difference between level of education and adoption of e-banking services in Islamic banking institutions.

Table 4.4 : Differences between level of education and e-banking adoption

Variable	Highest Education Level	Mean	Standard Deviation	Significant Level
E-banking adoption	Primary	4.00	.42	0.001
	Secondary	3.46	.93	
	STPM & equivalent	3.97	.73	
	Diploma & equivalent	3.90	.70	
	Bachelor & Master	4.12	.62	
	Others (PhD)	4.83	.41	

Table 4.4 above shows the analysis on hypothesis two of objective one in this study. It is to examine the differences between highest educational level with the e-banking adoption in Islamic banking institutions. Hence, the one-way ANOVA test is used to test the hypothesis. The output table in Appendix E shows the F value is 4.364 and the significant value is at 0.001. Since the significant value is lower than 0.05, hence the researcher conclude that there is significant difference in the educational level with e-banking adoption among Muslim customers. Further analysis on education level, the researcher found that the users with Bachelor and Master degrees are higher compared to the users with secondary school educational level (mean difference = 0.66, significant = 0.010). In addition, e-banking users with PhD educational level is to be found higher than the Bachelor and Master degrees level

(mean difference = 0.93, significant = 0.021). Apart from the comparison just now, the test showed that there is a different for e-banking users that have higher educational level with the users that have lower educational level in adopting e-banking services offered by Islamic banking institutions.

(c) Differences between occupation and e-banking adoption

Hypothesis 3

H_0 : There is no significant difference between occupation and adoption of e-banking services in Islamic banking institutions.

H_a : There is a significant difference between occupation and adoption of e-banking services in Islamic banking institutions.

Table 4.5 : Differences between occupation and e-banking adoption

Variable	Occupation	Mean	Standard Deviation	Significant Level
E-banking adoption	Government Sector	4.02	.73	0.217
	Private Sector	3.92	.77	
	Self-employed	3.74	.71	
	Student	3.97	.71	

Based on table 4.5 above, to test the hypothesis three which is to examine the difference between occupation and e-banking adoption, we also used one-way ANOVA test. The results showed that the significant level is at 0.217 which is greater than 0.05 (p=0.000), thus we failed to reject the null hypothesis and concluded that there is no significant difference between the occupation type and the adoption of e-banking among Muslim customers in Islamic banks.

4.4 The Relationship Between The Determinants and E-Banking Adoption

Correlation analysis use to examine the nature of relationship that exist between independent variables which are perceived usefulness, perceived ease of use, security, trust and cost and charges while dependent variables is the customers' adoption. Pearson correlation was run to analyze the data collected in this study. Below are the hypotheses tested in determined the relationship between independent and dependent variables.

$H_0$1 : There is no significant relationship between perceived usefulness and adoption of e-banking services in Islamic banking institutions.

H_a1 : There is a significant relationship between perceived usefulness and adoption of e-banking services in Islamic banking institutions.

$H_0$2 : There is no significant relationship between perceived ease of use and adoption of e-banking services in Islamic banking institutions.

H_a2 : There is a significant relationship between perceived ease of use and adoption of e-banking services in Islamic banking institutions.

$H_0$3 : There is no significant relationship between security and adoption of e-banking services in Islamic banking institutions.

H_a3 : There is a significant relationship between security and adoption of e-banking services in Islamic banking institutions.

$H_0$4 : There is no significant relationship between trust and adoption of e-banking services in Islamic banking institutions.

H_a4 : There is a significant relationship between trust and adoption of e-banking services in Islamic banking institutions.

H_05 : Cost and charges do not have any significant relationship with e-banking adoption Islamic banking institutions.

H_a5 : Cost and charges do have any significant relationship with e-banking adoption Islamic banking institutions.

Table 4.6 : Correlation between e-banking adoption and independent variables

Variables	Correlation	Significant Level
E-banking adoption	1.00	0.000
Perceived Usefulness	.724	0.000
Perceived Ease of Use	.696	0.000
Security	.697	0.000
Trust	.714	0.000
Cost & Charges	.533	0.000

Based on the table 4.6 above, the result shows that all independent variables are significant and positively correlated with the e-banking adoption at the confidence level of 99% ($\rho < 0.01$). It can be briefly explained as the stronger the independent variables are, the greater e-banking adoption in Islamic banks. Perceived usefulness has a high strength of association with the adoption of e-banking (72.4%) followed by trust (71.4%), perceived ease of use (69.6%), security (69.7%) and the last one is costs and charges (53.3%). These results explained that perceived usefulness and trust has a strong relationship with the e-banking adoption among Muslim customers in Islamic banks. Moreover, perceived ease of use and security has moderately correlates with the e-banking adoption. Then, cost and charges have the lowest correlation with the adoption.

4.5 The Influence of The Determinants Towards E-Banking Adoption

To examine the influence of the determinants towards e-banking adoption, the researcher uses multiple linear regressions as the analysis tool. Linear regression is used to predict the value of a variable based on the value of another variable. In this study, the researcher wants to predict the e-banking adoption among the customers while the variables used to predict the adoption are perceived usefulness, perceived ease of use, security, trust and cost & charges. There are five hypotheses were formulated as below:

H_0 : There is no influence between the determinants (perceived usefulness, perceive ease of use, security, trust and costs and charges) and e-banking adoption in Islamic banking institutions.

H_a : The determinants (perceived usefulness, perceive ease of use, security, trust and costs and charges) positively influence the adoption of e-banking services in Islamic banking institutions.

Table 4.7 : Result of Regression Linear result

Variables	B	t	Significant Level
Perceived Usefulness	.274	4.20	.000
Perceived Ease of Use	.062	.81	.420
Security	.132	1.97	.009
Trust	.062	1.30	.194
Cost & Charges	.231	3.63	.000

Constant = 0.997
R square = 0.61
F value = 78.82

In order to determine the relative influence between independent and dependent variables, multiple regression analysis is used to test the hypothesized relationships

between the determinants namely perceived usefulness, perceived ease of use, security, trust and costs and charges with the e-banking adoption in Islamic banking institutions. In addition, Islamic banks also use this analysis to determine the best predictors that influence customers' intention to adopt e-banking services offered. Hence, it is used to test the last objective of this study.

As discussed in previous chapter, preliminary analyses were performed in order to ensure there is no violation of the assumptions of outliers, multicollinearity, linearity, normality as well as homoscedasticity. It is found that all the assumptions are not violated in this study. Hence, multiple regressions can be used to examine the influences between independent variables on independent variable in this study. Table 4.9 above illustrated the results gathered from the multiple regression analysis. It shows that analysis of variance from the ANOVA table indicated that F statistic produced (F=78.82) is found to be significant (p=0.000) at the level 0.05 level. It can be concluded that this regression model reaches statistically significant as the p value is less than 0.05.

The R^2 obtained indicate the percentage of variance in the dependent variables that can be explained by the independent variables. The R square of the regression model is 0.61. By converting this figure to percentage, the R^2 for this model is 61 percent. Thus it showed that 61 percent of the variance of e-banking adoption can be explained by the all independent variables which are perceived usefulness, perceived ease of use, security, trust and cost and charges.

Furthermore, study from the output showed that variables perceived usefulness, security and trust is statistically significant to predict the customers' intention to

adopt e-banking in Islamic banking institutions at the interval level of 0.05. The highest B coefficient score is perceived usefulness with the B coefficient of 0.274 followed by trust, security while cost and charges and also perceived ease of use noted the same figure for the B coefficient value which are 0.231, 0.132, 0.062, 0.062 respectively. It can be concluded that perceived usefulness is the most influential independent variable on e-banking adoption among Muslim customers while the trust and cost & charges variables give a minimum impact on the adoption of e-banking. From the table 4.7, the B coefficient values then be included in the formula given below.

$$\mathbf{Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5}$$

$$Y = 0.997 + 0.27_{x1} + 0.06_{x2} + 0.13_{x3} + 0.06_{x4} + 0.23_{x5}$$

The formula above explains that when one unit of e-banking users' perceived usefulness increase then the e-banking adoption would increase by 0.27 units. Besides, with one unit of perceived ease of use increase contributes to increase 0.06 units of e-banking adoption among the Muslim customers. Next, one unit of security attribute increase would make the adoption of e-banking increase by 0.13 units. While with one unit of trust among the customers increased, would increase 0.06 units of e-banking adoption. Last but not least, one unit of costs and charges increase, would make e-banking adoption in Islamic banking institutions to increase by 0.23 units.

4.6 Views and Suggestions of Respondents

There are few of respondents' views and suggestions on e-banking services offered by Islamic banks in Kedah were included in this chapter. For instance, the services offered are convenient and friendly user to the respondents especially the internet banking facilities. As the online business has been rapidly expanding in these modern days, hence, the customers tend to register in online banking facilities to perform financial activities online for instance whether to buy something online, to pay the bills, to transfer the funds and so on.

Other than that, it is also some complaints on the Automated Teller Machines (ATM) which are regularly broke down or under maintenance. However, it is admitted that the ATM services offered by Islamic banks are easy to find and more functions can be done throughout the ATM machines for instance to reload the prepaid mobile. In addition, mobile banking offered especially by BIMB is also one of the favorite services used by the respondents as they do not need to online using internet to perform the transactions but only with the short messaging service (SMS) they can check the account balance, get the transaction notifications and some other functions same with the ATM and also internet banking.

Nonetheless, there are few respondents mentioned that they are using the e-banking services offered by Islamic banks as they believe that they are using the facilities that are accordance with syariah where there are no prohibited activities involved.

4.7 Conclusion

In this chapter, finally the researcher has discussed on the analysis of data collected. The data were analyzed using SPSS 20.0 and overall the analysis process involves testing of reliability followed by descriptive statistic and then hypotheses of this study were tested. The reliability test was done with all variables and it shows all of them are reliable to use. In testing hypotheses on relationship between the determinants and e-banking adoption, Pearson correlation was used and the result shows all the determinants have a positive relationship with the adoption. While to test the influence of the determinants towards e-banking adoption, multiple linear regression was used. The result indicates that only three of the variables influence the adoption and perceived usefulness to be found the most influential factor in this study.

CHAPTER FIVE

FINDING AND DISCUSSIONS

5.1 Introduction

This chapter will discuss the research findings as mentioned in previous chapter. All items that had been analyzed in research findings will be presented in this chapter to highlight the most influential determinants towards e-banking adoption in Islamic banking institutions. Other than that, this chapter will also give a brief overview of the introduction, review of related literature, methodology and findings of the study. Moreover, the inferences from the findings will be discussed in this chapter and finally recommendation for future research have also been suggested.

The main objective of this study is to identify the most influential factors of e-banking adoption among Muslim customers offered by the selected Islamic banks. The main objective of research is then sub-divided into supplementary objective which the following:

i. To examine the differences between demographic factors (gender, level of education and occupation type) and e-banking adoption in Islamic banking institutions.

ii. To explore the relationship between the determinants namely perceived usefulness, perceived ease of use, security, trust and costs and charges with e-banking adoption among Muslim customers in Islamic banking institutions.

iii. To examine the factors influence customers' adoption towards e-banking services offered by Islamic banking institutions.

This study was conducted based on several attributes listed by researchers such as Davis (1989), Cheng et al. (2006), Poon (2008), Lee (2009), Alam et al. (2009), Dixit and Datta (2010), Salari and Salajegheh (2011), Kazi (2013), Takele and Sira (2013) and Sohrabi et al. (2013). For the purpose of this study, researcher used instruments by Cheng et al. (2006), Poon (2008), Lee (2009) and Sohrabi et al. (2013) as the main references in developing the questionnaires. The data then were collected and analysed using SPSS version 20.

5.2 Respondent Profile

The first objective in this study is to compare the Muslim customers' adoption of e-banking in Islamic banking institutions based on their selected demographic factors namely gender, level of education and types of occupation. The gender includes male and female while the level of education was categorized into six which are primary school, secondary school, STPM and equivalent, Diploma and equivalent, Bachelor and Master Degree and the last on is others, PhD. While types of occupation consists of government sector, private sector, self-employed and student.

Based on the findings discussed in chapter 4, we found out that there is no difference between the gender and the e-banking adoption. It means whether male users or female users both are likely to adopt e-banking services in Islamic banking institutions. This is not consistent with the studies conducted by most of researchers which has found that male and female users have the differences in using the e-

banking services offered. For instance, studies by Tan and Teo (2000), Dixit and Datta (2010) and Ismail and Osman (2012) revealed that the male users are highly adopting the e-banking services. While, Lee (2009), Sulaiman et al. (2005) and Cheng et al. (2006) found that otherwise.

In the meantime, the highest educational level and the types of occupation showing that there are differences with the e-banking adoption in Islamic banking institutions. The highest education level adopting these services are between the Diploma & equivalent with 55.2% from the total of respondents. Equivalent here means the others certificates or education type that has the same level with the diploma level. Thus, it explains the most range in the age section is between 25 to 35 years old which represents about 38.7% among the respondents. These results parallel with Onyia and Tagg (2012) which found that level of education is the one of the major influence towards e-banking adoption in Africa. The types of occupation the users have also showing the difference in e-banking adoption. Results showed that students have the highest percentage in using the services offered with 47.1% and the second higher is the government sector servants which represents 25.3%. This study was conducted in the areas which there were a few of higher learning institutions nearby which explained the results received. These finding then consistent with the study by Onyia and Tagg (2012) where they found that the adoption of e-banking especially the internet banking service is mostly by the white collar workers and it became also one of the major contribution to the e-banking adoption.

5.3 Relationship between the determinants and e-banking adoption

The second objective of this study is to examine the relationship between the determinants namely perceived usefulness, perceived ease of use, security, trust and costs and charges. The findings shows that all the determinants mentioned have a significant relationship with e-banking adoption. The highest strength of association with the e-banking adoption was found to be the perceived usefulness. Perceived usefulness is the degree which the users or customers of e-banking believes that adopting the services offered would enhance their activities performance. It means that one can make the use of e-banking in performing or completing their financial activities. These findings were consistent with studies conducted by Cheng et al. (2006), Chong et al. (2010) and Salari and Salajegheh (2011) where their finding showed perceived usefulness always has significant relationship towards e-banking adoption among the customers.

The second higher relationship with the adoption is the trust factor. Trust as defined by Patrick (2012) is the users' thoughts, feelings, emotions, or behaviors that occur when customers feel that the provider can be relied upon to act in their best interest when they give up direct control. It was found that by the previous researchers that the trust in technology from the consumer's perspective constantly influence the adoption of e-banking services products. With the strong association of strength, perceived usefulness and trust both have a strong relationship with the e-banking adoption among Muslim customers in Islamic banks.

5.4 Influence between the determinants and e-banking adoption

Finally the last objective of this study is to examine the most influential determinants of e-banking adoption in banking institutions. As we know, the determinants here consists of perceived usefulness, perceived ease of use, security, trust and costs and charges. From the results, there are three determinants that have their influences towards e-banking adoption namely perceived usefulness, security and trust. Perceived usefulness was found to be the most influential determinant on e-banking adoption in Islamic banking institutions. It is consistent with the argument of Technology Acceptance Model by Davis (1989) which stated that perceived usefulness will directly influenced the behavioral intention of the user. In addition, if a certain new technology improves the performance of the users, potential users will develop a positive intention to adopt it.

However, this finding is not consistent with the second argument from Davis that perceived usefulness is influenced by the perceived ease of use. He argued that whenever the technology is free of effort, potential users will realize its usefulness. It can be said like when the users of e-banking realize the e-banking services are easy to use, then they will realize the use of the e-banking services themselves. Though the results showed that perceived ease of use does not influence the customers to adopt e-banking services offered by Islamic banking institutions. In addition, the findings are consistent to the study by Chong et al. which found that perceived ease of use did not influence the customers intention to adopt e-banking services in Vietnam.

5.5 Implications of the study

In this section, the researcher will present the implications of this study in theoretical and also practical views.

5.5.1 Theoretical Implications

On a theoretical level, this study proposed a contribution to better understand the customers' adoption of e-banking services offered by Islamic banking institutions. We used the Technology Acceptance Model by Davis (1989) in order to explore the most influential determinants which contribute to the customers' adoption. Indeed, the application of TAM in examine the intention to adopt has been widely used by the past researchers in order to find the customers intention towards new technology services established. This study using both the attribute of TAM, which consists of perceived usefulness, and perceived ease of use. In general, the findings showed in this study are satisfactory since both of the TAM attributes proven to have the relationship with the e-banking adoption even though there just only perceived usefulness that has influence towards the customers' adoption.

On the other hand, the other three attributes namely security, trust and costs and charges that were adopted from the previous studies showing the positive relationship towards e-banking adoption among Muslim customers. Nonetheless, the cost and charges were not influencing the customers' intention to adopt e-banking services. Security and trust in the other hand do affecting the customers decision to adopt e-banking services offered as findings by Dixit and Datta (2010) showed that in spite of the customers' security concern, they are willing to adopt e-banking if the

banks provided necessary guidance. So do with the study carried out by Sohrabi et al. (2013), trust is one of the highest concern which effect the e-banking adoption.

5.5.2 Practical Implications

Findings in this study also have the practical implications such as for the financial institutions including Islamic banks in knowing their customers' factor to adopt the services offered by them so that they can formulate the strategies to attract their potential customers. As we know, the e-banking services provide many facilities that benefitted both customers and the banks itself. Besides, the banks can actually understand their customers' preferences which then will increase their loyalty. Hence, Islamic banks should take these opportunities as one for their cost reduction in operations and also to upgrade the image of Islamic banks towards the customers.

Additionally, these results also give the implication towards the policy makers as to identify the most appropriate rules and regulations needed to ensure effectiveness of electronic banking services delivered by Islamic banks and other financial institutions to their customers. These would give more confident for all parties involved, the banks and the customers in which to offer and adopt e-banking services. From this study, we knew that security and trust determinants influenced the customers' intention to adopt. Hence, the policy makers can pay more attention in these two determinants mentioned.

Other than that, the findings of this study would give the implication towards the academicians that offered a better understanding on the factors that contribute

significantly towards the adoption of e-banking in Islamic banking institutions. Thus, it would be more beneficial to the academicians these results so that they can gain some relevant and related information and ideas from this study.

5.6 Recommendations

In the underlying study, the researcher has made an effort to develop a model to measure the customers' adoption towards e-banking services in Islamic banks. The conducted research showed that some modifications were necessary to the initial theoretical model in order for higher reliability and consistency to be achieved. In addition, it should be taken into consideration that this effort has led to a preliminary constructed model which needs to be further examined and qualified based on surveys conducted with higher number of respondents from a different zone and national contexts.

Furthermore, in order to test the factors that lead to the Muslim customers' intention to use, a religiosity factor should be added to strengthen the framework. As we know, religiosity can be a factor to the Muslim customers in selecting their banks' preference to do financial transactions since there are established Islamic banks that offered a variety of Shariah compliant products. Religion is one of the most universal and influential social institutions that have significant influence on people's attitude, values and behaviors at both the individual and society levels (Alam et al., 2012). Other than that, the religiosity also denotes the prohibited and non-prohibited matters in which influence customer's decision to adopt certain of products offered. Hence, it is suggested that the future study should add this factor as in determine the adoption of e-banking among Muslim customers in Islamic banking institutions.

Last but not least, it is also recommended that the Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) could be combined together to create a strong model to predict the customers' behavior and intention in adopting e-banking services offered in the future research.

5.7 Conclusion

The research was conducted to identify the factors that influence the adoption of e-banking in Islamic banks among Muslim customers in Kedah mainly conducted in small towns Changlun and Sintok. Using the Technology Acceptance Model (TAM) by Davis (1989) and a combination of factors from previous studies, the researcher was testing the new model to predict the e-banking adoption. Results show the factors namely perceive usefulness, security and trust are suitable to predict the customers' intention to adopt e-banking. However, this study has not yet explored the most suitable determinants to examine customers' adoption towards e-banking in Islamic banking institutions particularly from the religiosity aspect.

REFERENCES

Alghamdi, R., Nguyen, J., Nguyen, A., & Drew, S. (2012). Factors Influencing E-Commerce Adoption By Retailers in Saudi Arabia: A Quantitative Analysis. *International Journal of Electronic Commerce Studies*, *3*(1), 83–100.

Al-Madi, F. (n.d.). The effects of E-banking on The Jordan Islamic Bank clients Satisfaction, 1–21.

Bank Negara Malaysia. (2013). *Payment systems in malaysia*.

Charlotte Chong. (2013). Electronic banking transactions close to RM15 trillion in 2012. Retrieved December 15, 2013, from http://www.theedgemalaysia.com/business-news/229344-electronic-banking-transactions-close-to-rm15-trillion-in-2012.html

Cheng, T. C. E., Lam, D. Y. C., & Yeung, A. C. L. (2006). Adoption of internet banking: An empirical study in Hong Kong. *Decision Support Systems*, *42*(3), 1558–1572. doi:10.1016/j.dss.2006.01.002

Chong, A. Y.-L., Ooi, K.-B., Lin, B., & Tan, B.-I. (2010). Online Banking Adoption: An Empirical Analysis. *International Journal of Bank Marketing*, *28*(4), 267–287. doi:10.1108/02652321011054963

Dixit, N. (2010). Journal of Internet Banking and Commerce. *Journal of Internet Banking and Commerce*, *15*(2).

Hassan, Y., Yahya, F., Amin, M., & Arshad, U. F. (2011). Awareness of Electronic Banking In Pakistan. *Global Journal of Computer Science and Technology*, *11*(17), 13–22.

Ismail, M. (2012). Factors Influencing the Adoption of E-banking in Sudan: Perceptions of Retail Banking Clients. *Journal of Internet Banking and Commerce*, *17*(3).

Jabatan Perangkaan Malaysia. (2010). Taburan Penduduk dan Ciri-ciri Asas demografi.

Jamshidi, D., & Hussin, N. (2013). Determining a Conceptual Framework for Adoption of Islamic Credit Card in Context of Malaysia, *3*(1), 188–196.

Kazi, A. K. (2013). An empirical study of factors influencing adoption of Internet banking among students of higher education: Evidence from Pakistan. *International Journal of Finance & Banking Studies*, *2*(2), 87–99.

Keivani, F. S., Jouzbarkand, M., Khodadadi, M., & Sourkouhi, Z. K. (n.d.). A General View on the E-banking, 62–65.

Krishnan Guru, B., Vaithilingam, S., Ismail, N., & Prasad, R. (2000). Electronic Banking in Malaysia: A Note on Evolution of Services and Consumer Reactions. *Journal of Internet Banking and Commerce*.

Lee, M.-C. (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. doi:10.1016/j.elerap.2008.11.006

Mansor, N., Shariff, A., & Abdul Manap, N. R. (2012). Determinants of Awareness on Islamic Financial Institution E-Banking among Malaysian SMEs. *International Journal of Business and Social Science*, *3*(5), 93–101.

Munusamy, J. (2012). Adoption of Retail Internet Banking: A Study of Demographic Factors. *Journal of Internet Banking and Commerce*, *17*(3).

Musa, R., & Hassan, F. (2009). Corporate Customers ' Adoption of Internet Banking : Case of Klang Valley Business Firm in Malaysia. *International Journal of Business and Management*, *4*(June 2000), 13–21.

Nathan, R. J. (n.d.). Electronic Commerce Adoption in the Arab Countries – An Empirical Study.

Onyia, O. P., & Tagg, S. K. (2012). Effects of demographic factors on bank customers' attitudes and intention toward Internet banking adoption in a major developing African country. *Journal of Financial Services Marketing*, *16*(3-4), 294–315. doi:10.1057/fsm.2011.28

Pawar, J. (2013). Awareness among the people about E-Banking Services with Special reference to the cosmos co- operative Bank Ltd., Pune (Maharashtra). *Research Journal of Science & IT Management*, *2*(3), 35–43.

Poon, W.-C. (2008). Users' adoption of e-banking services: the Malaysian perspective. *Journal of Business & Industrial Marketing*, *23*(1), 59–69. doi:10.1108/08858620810841498

Riyadh, A. N., Akter, S., & Islam, N. (2009). The Adoption of E-banking in Developing Countries : A Theoretical Model for SMEs. *International Review of Business Research Papers*, *5*(6), 212–230.

Sekaran, U. (n.d.). *No Title*.

Sohail, M. S., & Shanmugham, B. (2003). E-banking and customer preferences in Malaysia : An empirical investigation. *Information Sciences*, *150*(150), 207–217.

Sohrabi, M., Yee, J. Y. M., & Nathan, R. J. (2013). Critical Success Factors for the Adoption of e-Banking in Malaysia. *International Arab Journal of e-Technology*, *3*(2), 1–7.

Sulaiman, A., C.H, L., & Wee, A. (2005). Prospects and Challenges of E-Banking in Malaysia. *The Electronic Journal on Information Systems in Developing Countries*, *22*(1), 1–11.

Tan, M., & Thompson, S. H. T. (2000). Factors Influencing the Adoption of Internet Banking. *Journal of the Associaton for Information Systems*, *1*(July).

Yiu, C. S., Grant, K., & Edgar, D. (2007). Factors affecting the adoption of Internet Banking in Hong Kong—implications for the banking sector. *International Journal of Information Management*, *27*(5), 336–351. doi:10.1016/j.ijinfomgt.2007.03.002

Gay, L., & Diehl, P. (1996). *Research Methods For Business and Management.* Singapore: Prentice Hall.

Hair, J., Babin, b., Money, A., & Samouel, P. (2003). *Essentials of Business Research Methods.* United States of America: Leyh Publishing.

Kondabagil, J. (2007). *Risk Management in Electronic Banking: Concepts and Best Practices.* Singapore: John Wiley & Sons (Asia) Pte Ltd.

Lipis, A. H., Marschall, T. R., & Linker, J. H. (1985). *Electronic Banking.* Canada: John Wiley & Sons.

Ravi, V. (2008). *Advances in Banking Technology and Management: Impacts of ICT and CRM.* United States of America: Information Science Reference.

Shah, M., & Clarke, S. (2009). *E-BANKING MANAGEMENT : Issues, Solutions, and Strategies.* London: Information Science Reference.