THE DETERMINANTS OF BEHAVIOURAL INTENTION TO ADOPT MOBILE BANKING AMONG UNIVERSITY STUDENTS

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ABSTRACT

This study examined the behavioural intention and determinants to adopt mobile banking services among university students in Malaysia. In line with the objectives of the study the Unified Theory of Acceptance and Use of Technology model was utilised to investigate and explain the relationship between performance expectancy; effort expectancy; social influence; perceived financial costs and perceived risk on behavioural intention to adopt mobile banking among the undergraduates. Besides, the moderating effect of prior internet banking experience on behavioural intention to adopt mobile banking services was also being examined. Quantitative approach using self administered survey questionnaires was adopted. A total of 220 usable responses were received from university students in Malaysia which accounted to a 55% response rate. A combination of SPSS and the PLS-SEM methods were used to analyse the collected data. The findings indicated significant relationships between performance expectancy; social influence; perceived financial costs; perceived risk and the behavioural intention to adopt mobile banking services among university students in Malaysia. Effort expectancy on the other hand had no significant relationship to the adoption of mobile banking among the university students. This research also provided evidence that prior internet banking experience among the same consumers had a moderating effect on the relationship between social influence and behavioural intention to adopt mobile banking services. The implications based on the findings of this study for financial institutions such as banks would be able to better reconfigure and realign their policies and plans when seeking to promote mobile banking services to their clients in the future. Towards this end, the methodological limitations and potential avenues for future research were also identified and hitherto explained.

Keywords: mobile banking services, behavioural intention, internet banking experience, perceived risk, social influence.

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ABSTRAK

Kajian ini menyelidik niat dan penentu tingkah laku untuk menggunakan perkhidmatan perbankan mudah alih dalam kalangan pelajar universiti di Malaysia. Sejajar dengan objektif kajian ini Teori Gabungan Penerimaan dan Penggunaan Teknologi telah digunakan untuk menyiasat hubungan antara jangkaan prestasi; jangkaan usaha; pengaruh sosial; kos kewangan yang ditanggap dan risiko yang ditanggap terhadap niat tingkah laku untuk menggunakan perbankan mudah alih dalam kalangan mahasiswa. Selain itu, kesan penyederhanaan pengalaman perbankan internet yang diperolehi dari masa lampau terhadap niat tingkah laku untuk menggunakan perbankan mudah alih juga dikaji. Pendekatan kuantitatif menggunakan soal selidik tinjauan yang ditadbir sendiri telah diguna pakai. Sebanyak 220 maklum balas yang boleh digunakan telah diterima daripada pelajar universiti di Malaysia dan ini menyumbang kepada kadar maklum balas sebanyak 55%. Gabungan kaedah SPSS dan PLS-SEM telah digunakan untuk menganalisis data yang dikumpulkan. Dapatan kajian menunjukkan bahawa terdapat hubungan yang signifikan di antara jangkaan prestasi; pengaruh sosial; kos kewangan yang ditanggap; risiko yang ditanggap dan niat tingkah laku untuk menggunakan perkhidmatan perbankan mudah alih di kalangan pelajar universiti di Malaysia. Pada masa yang sama jangkaan usaha didapati tidak mempunyai hubungan signifikan dengan pengunaan perkhidmatan perbankan mudah alih di kalangan pelajar universiti di Malaysia. Kajian ini juga membuktikan bahawa pengalaman perbankan internet dari masa lampau mempunyai pengaruh penyederhanaan terhadap hubungan antara pengaruh sosial dan niat tingkah laku untuk menggunakan perkhidmatan perbankan mudah alih di kalangan penguna yang sama. Implikasi penemuan kajian ini kepada institusi kewangan dan bank adalah menbantu dalam penyusunan semula polisi dan perancangan untuk mempromosikan perkhidmatan perbankan mudah alih kepada pelanggan mereka di masa depan. Akhir sekali, batasan metodologi dan potensi untuk penyelidikan masa depan juga telah dikenalpasti dan diterangkan.

Kata Kunci: perkhidmatan perbankan mudah alih, niat tingkah laku, pengalaman perbankan internet, risiko yang ditanggap, pengaruh sosial.

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LIST OF ABBREVIATIONS

ASEAN	:	Association of Southeast Asian Nations
AMOS	:	Analysis of Moment Structures
CSE	:	Computer Self Efficacy
DOI	:	Diffusion of Innovation Theory
IS	:	Information System
PEOU	:	Perceived Ease of Use
PU	:	Perceived Usefulness
PLS-SEM	:	Partial Least Squares Structural Equation Modelling
SCT	:	Social Cognitive Theory
SPSS	:	Statistical Package for the Social Sciences
T	:	Trust
TAM	:	Technology Adoption Model
TPB	:	Theory of Planned Behavior
TRA	:	Theory of Reasoned Action
UTAUT	:	Unified Theory of Acceptance and Use of Technology
UUM	:	Universiti Utara Malaysia
UTAR	:	Universiti Tunku Abdul Rahman

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The conventional banking method has been in existence for decades and commonly carries out worldwide (Luaran and Lin, 2005). Rapid growth in IT (Information Technology) has affected how banks operate. (Amin, H. et al., 2007). The emergence of information technology (IT) has revolutionalized banking methods today. Over the years, various banking technologies have been developed. Firstly, Automated Teller Machine (ATM) was developed, followed by internet or online banking and now the appearance of mobile banking and financial technology (Fintech) in the banking industry. According to Kiran (2012), mobile banking has evolved over the years from a simple information delivery channel like SMS banking to today‟s mobile banking which is an alternative banking transaction tool.

The usage of mobile phones and internet across the world has gained traction among the younger generation. In Malaysia, the usages of mobile phones and internet have risen gradually over the years. Banks have started to offer mobile banking services to deliver better and faster services to their clients.

1.1.1 Malaysian Banking Environment

Malaysia banking environment has experienced dynamic growth over the past few decades. In the 11th Malaysia Banking Summit, Dr Zeti Akhtar Aziz (2007), the former Governor of the Bank Negara Malaysia has highlighted that the Malaysian banking sector is undergoing transformation focusing on the following strategies and trends.

Firstly; configuration of financial market and global economy where the global economy has changed in line with the emergent of a few large economies especially in Asia; Asia‟s global role has enhanced with the growth of China, India and South East Asia. These changes have brought opportunities to the financial service market in Malaysia due to in flow of fund into the capital market of emerging economies.

Secondly; Financial and regional economy‟s integration. The economic integration in Asia has been at the advanced stage due to the intra regional trade. This has led to further financial integration and opportunities for the banking industry. Intra regional investments bring many regional merger and acquisition activities which encouraged cross border financing for the Asian Financial Institutions. This bring cross border banking business opportunities to the Malaysian banks. The financial integration trend also encourages pool of savings among institutional and high networh individuals in the region. This enables bankers to take advantage on the growing demand for more sophisticated consumer finance and wealth management solutions.

Third; developments of financial sector in many countries have moved forward to promote more diversified and dynamic financial systems. Malaysia has gradually liberalized its foreign exchange administration rules since 2003 to provide greater flexibility to the financial sector. This has reduced the cost of doing business as well as increasing banking activities for the financial sector.

Fourth, due to the significant increased in domestic demands among the Asian economies supported by growing incomes, stable labor market environment and a young demographic profile, private consumption activities of the society have shifted towards lifestyle services and income sensitive products. The retail banking sector should be well positioned to deliver a wider range of innovative financial services solutions to cater for the demands of these increasingly sophisticated and savvy banking clients.

Fifth, the growth of Islamic finance in line with the significant growth of Islamic Finance globally, the Malaysia International Islamic Financial Centre (MIIFC) launched in August 2006, has position the nation strategically in this new growth area. Under the MIFC initiative, Islamic banking institutions are able to offer a full range of banking services include wholesale banking, retail banking, investment banking as well as international currency business.

Sixth, regulatory approaches and structures adopted by the Central Bank of Malaysia have eased the product approval framework to facilitate the product innovations with objective of improving time required by financial institution to launch or introduce new

products while assuring a sound product management programme is in place. This simplified the regulatory processes to allow greater flexibility when introducing new financial products quickly in the market.

Along with the above transformation in the Malaysian banking industry, the internet has played a vital role. The growth of internet has brought new and innovative applications into the banking sector. Over the past few years, mobile commerce activities have been growing in a steady rate. Wong (2013) noted that despite the number of mobile phones users has increased swiftly in the Southeast Asia region in the recent years (Figure 1.1), the rate of mobile banking adoption is still low. On the other hand, StatCounter Global Stats (2016) reported that more consumers are using mobile phones to access to internet in Malaysia. It is estimated that the Malaysian banking sector would grow further in the near future as there are still room to capture the mobile banking services customers with the increasing usage of wireless technologies and mobiles gadgets in Malaysia (Krishanan, Khin and Teng, 2015). Thus, banks in Malaysia are actively developing their mobile banking service capabilities to encourage more customers to accept mobile banking services in line with the trend.

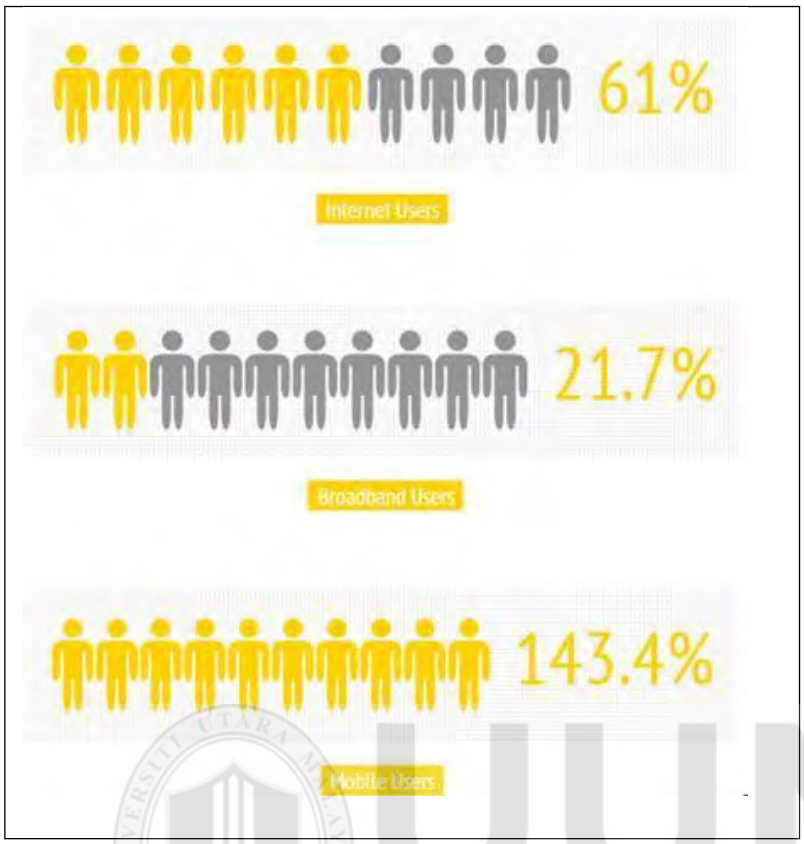


Figure 1.1: People utilizing: Internet, Broadband and Mobile.

Source: Wong (2013)

1.1.2 Information Technology Adoption in Banking

As information technology evolves, financial institutions have made changes and introducing many innovative banking applications. This has lead to the acceptance of mobile banking service among the banking customers worldwide (Aboelmaged and Gebba, 2013). In 2009, Maybank introduces mobile banking application in Malaysia (Krishanan, Khin and Teng, 2015). This is followed by others banks like CIMB Bank, Al Rajhi Bank, AmBank, Bank Islam Malaysia, OCBC Bank, Public Bank, Bank Simpanan Nasional, RHB Bank, Hong Leong Bank, Standard Chartered Bank and Citibank. Mobile

banking services enable mobile phone users to access mobile banking services. This would encourage more mobile banking adoption and usage in Malaysia.

According to WeAreSocial (2015), an international branding agency, Malaysia has achieved fast growth in the number of mobile phone users, especially among age groups between 18-25 years. Report by StatCounter Global Stats (2016) also shows that mobile phone has overtaken computers as a gateway to access information in Malaysia. Malaysia Communications and Multimedia Commission (2017) reported in its recent hand phone users survey 2017 that the Malaysian of age group between 20-30, are the largest age group who use smartphone technology (Figure 1.2).

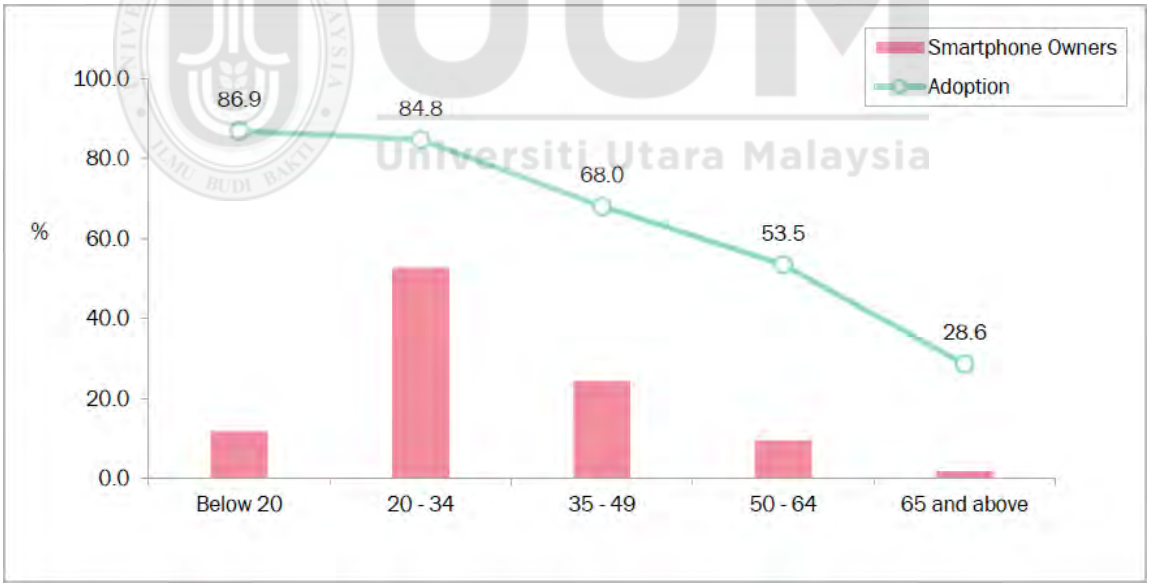


Figure 1.2: Age groups of Smartphone users in Malaysia

Source: Malaysia Communications and Multimedia Commission (2017)

E-commerce and M-commerce have changed the face of banking industry in the past decade; similarly mobile banking services have changed how banking businesses operate.

The growth in telecommunication industry has impacted on the Malaysian society; Malaysia is not far from Singapore in term of utilizing IT (Clarestalwj, 2010).

1.1.3 Mobile Banking in Malaysia

Wireless and mobile technologies have influenced the banking industry with higher speed, convenience, round-the-clock availability and real-time updating of transactions. Banks have promoted mobile banking due to the efficient services and benefits provided by mobile technology. Mobile banking helps to lower operating cost that encourages banks to encourage more customers to adopt mobile banking service. However, most of the Malaysia banking customers has not adopted mobile banking services yet and there is still lot of room to improve the adoption rate, [Ndubisi and Sinti (2006), Rubiah Abu Bakar et al., (2017)]. Bank Negara Malaysia (2018) reported rate of mobile banking adoption as of September 2018 with a penetration rate of 32.3% among the mobile phone subscribers in Malaysia.

In Malaysia, the general understanding about mobile banking was about receiving SMS from the banks on information of transactions. Banking customers in Malaysia prefer mobile banking services features such as SMS alerts, mobile payment facilities, ease of access, security and privacy (Wang et al., 2003). Both security as well as privacy issue

are the least significant factors to be considered by the Malaysia users when using mobile banking service. There are various daily transactions like mobile phone bills, purchase of grocery, purchase of movie ticket or other online purchases can be performed by mobile banking. Bank customers can made their payments via mobile banking where each successful payment transactions will be notified by an instant text message and the time required to perform these transactions by using mobile banking are relatively lower compared to the door-to-door purchase or payment of bills over the counter.

According to WeAreSocial (2015), Malaysia is one of the countries among the Southeast Asian countries with many mobile phone users, especially among age group between 18-25 years. Despite the StatCounter Global Stats (2016) as earlier mentioned, reported that mobile phone has overtaken computers as a gateway to access information but the mobile banking adoption and usage rate is still relatively low compared to conventional banking services.

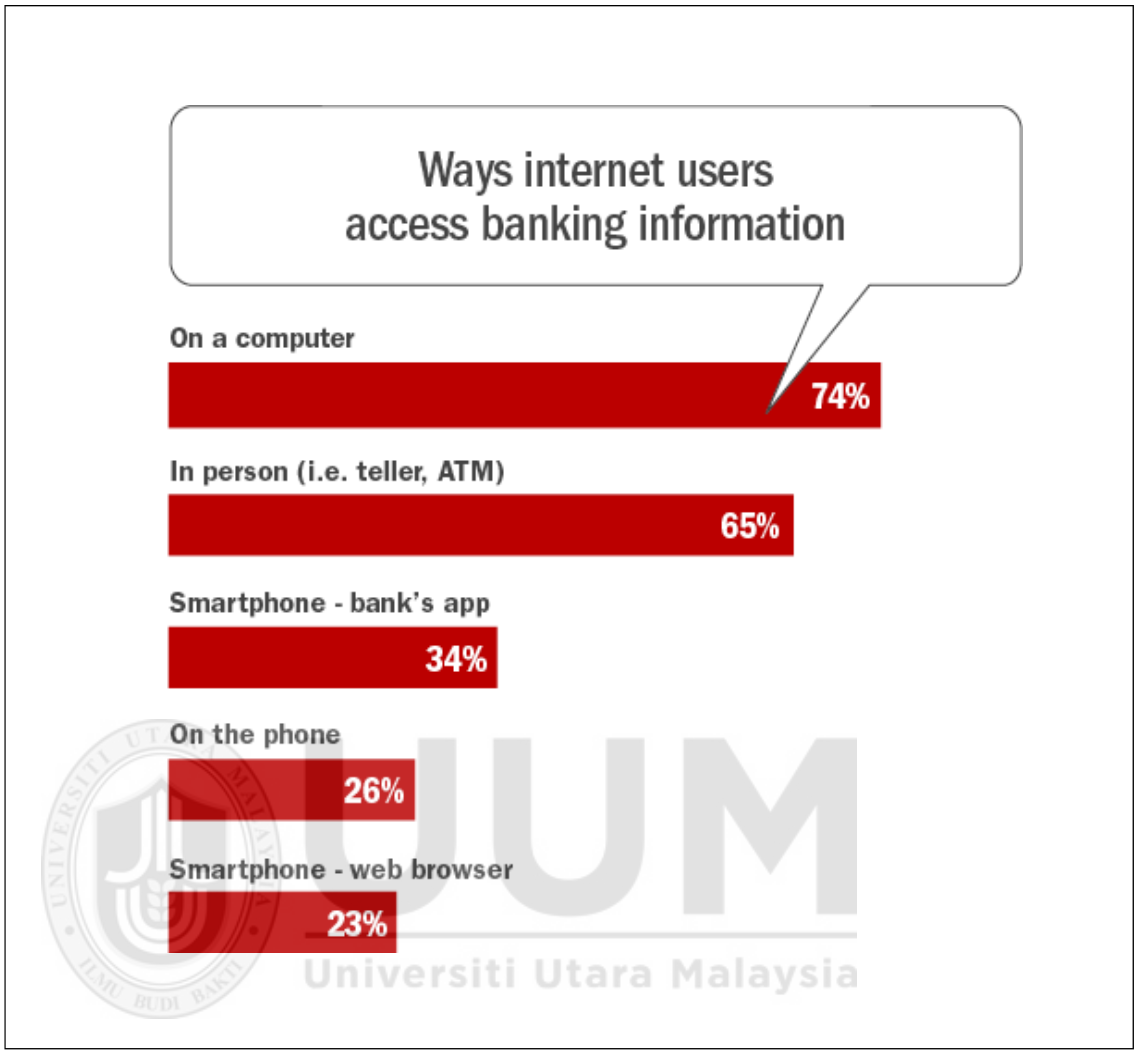


Figure 1.3: Methods Bank's Customer Accessing Banking Services

Source: Jim Marous (2014)

Figures 1.3 provide statistics on the methods that bank customers‟ access to banking services. Studies conducted by Jim Marous (2014) suggested that bank customers use internet banking or prefer to do conventional banking at bank‟s premises. There is still room to grow mobile banking service as an alternative delivery channel to the bank

customers as adoption rate of mobile banking service among the bank customers is still low.

1.1.4 Understanding Mobile Banking and Related Terms

From the bank‟s perspective, mobile banking service enables customers to complete banking transactions by using a mobile device like mobile phones or tablets. Compared to internet banking, mobile banking could not accommodate banking services like telegraphic transfer, travel insurance payment, placement of fixed deposit and opening of account that internet banking service could provide. Mobile banking service features usually include viewing of account balances, paying bills, fund transfers, checking of rates and locations of ATMs. Besides that, the internet banking service (or on line banking) and mobile banking service is different from the point that customers are required to download an application (apps) or software which is usually provided free by the banks. In contrast to internet banking service, customers are not required to download any apps in order to perform their banking transaction that is done via bank‟s website.

The banking sector has transformed their mobile applications in banking from just sending SMS queries on viewing of bank account statement through mobile phone. Payments can now be done through various apps that support mobile banking. Initially the mobile banking term was misunderstood widely with “SMS” or “Online banking”. Awareness campaigns and promotional activities have enabled the public to gain better knowledge and understanding on mobile banking services offered by the banks or other

financial institutions. Jim Marous (2014) opined mobile banking has a variety of uses rather than the perceived ideas and awareness that one has. (Figure 1.4)

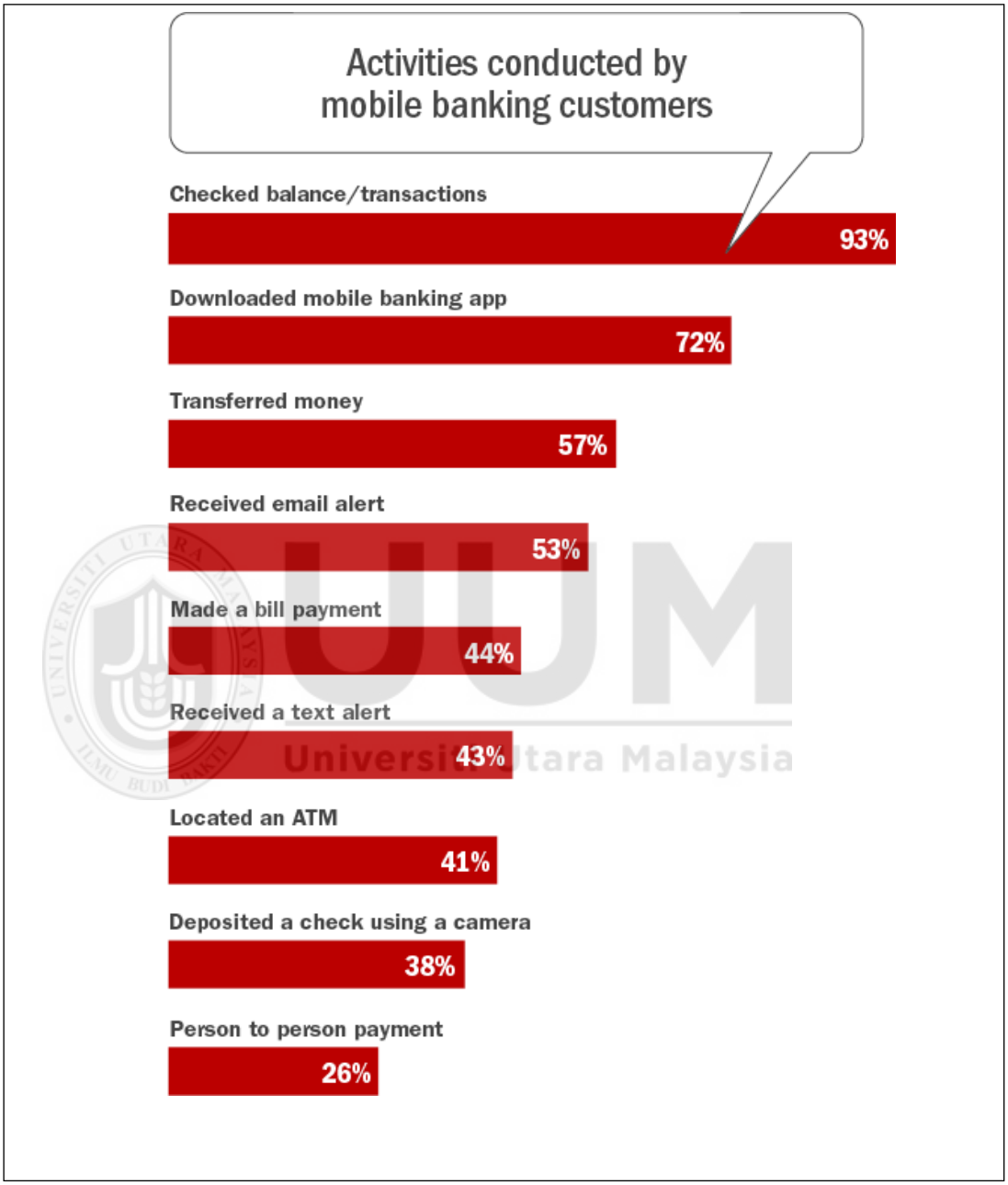


Figure 1.4: Mobile Banking – Services Rendered and Used

Source: Jim Marous (2014)

1.2 Problem statement

Although there is a rapid growth of mobile banking adoption and usage in some emerging nations like China and Brazil where new users of mobile banking services has increased 100% over 12 months, (Khraim, Shoubaki, and Khraim, 2011). However, mobile banking adoption in Malaysia is still at its infant stage of development (Cheah et al., 2011). Daud, Kassim, Wan Mohd Said, and Noor (2011) highlighted that mobile banking are still not widely adopted among the Malaysian although it has been launched for almost a decade since 2006. Yeow Pooi Mun et al. (2017) further supported that mobile payment service is considered new and at its infancy stage in Malaysia.

According to the data reported by Malaysian Communications and Multimedia Commission (2012a), the penetration level of mobile phones users is 141.6 percent compared to the penetration rate of mobile banking usage which is (8.3 percent only) among Malaysia population. Financial Stability and Payment System Report, published by Bank Negara Malaysia (2013), reported that mobile banking adoption in Malaysia was at 12.7 percent despite broadband subscriptions of 67.1 percent. This suggested that mobile banking service is still not popular among the banking customers in Malaysia. Only a small proportion has accepted mobile banking services. On the other hand, data from Bank Negara Malaysia (2010) also suggested that mobile banking transactions were reduced both in term of volume and value though there is an increased in the total number of mobile banking customer in 2010. Besides, as mentioned earlier, Bank Negara Malaysia (2018) has reported penetration rate of mobile banking adoption as of September 2018 was only 32.3% among the mobile phone subscribers in Malaysia. Thus,

the above have suggested that there is a need to examine this phenomenon in terms of customers‟ reluctant and low intent to accept mobile banking service in Malaysia.

Most of the past study emphasised more on mobile banking adoption. In an effort to advance the acceptance rate of mobile banking service, it is important to study customers‟ intention to adopt by understanding the determinants that influence an individual‟s intention to adopt mobile banking service (Baba and Muhammad, 2012). Thus, the focus of this study is to understand the mobile banking behavioral intention rather than mobile banking adoption. This study is important to help banking services providers to understand and fill knowledge gap for future strategic planning in order to improve mobile banking service adoption.

Past studies have used various theories to examine technology adoption. The theories include Diffusion of Innovation Theory (DOI), Technology Adoption Model (TAM), Theory of Planned Behavior (TPB) and Theory of Reasoned Action (TRA) which have been commonly used to predict behavior in innovation technology adoption. Unified Theory of Acceptance and Use of Technology (UTAUT) has also been adopted to study the determinants that affect a technology innovation adoption intention but limited study was conducted using the UTAUT model as most of the past study on mobile banking adoption intention was TAM based research. Hence, this justify to perform more research using UTAUT model.

UTAUT model was developed by Venkatesh et al. (2013) by bringing together Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), the Model of PC Utilization, the Diffusion of Innovation Theory (DOI) and the Social Cognitive Theory (SCT).

UTAUT consist of of four main constructs which including performance expectancy, effort expectancy, social influence and facilitating conditions that affect technology adoption behavioural intention. The determinants that influence technology innovation adoption intention used in this research are performance expectancy, effort expectancy, social influence, perceived financial cost and perceived risk of mobile banking service adoption intention in view of limited past research on the abovementioned determinants of mobile banking service adoption in Malaysia especially among the university students. Besides that the results of the past study was inconclusive and thus further study is required to understand the phenomena. Due to its comprehensiveness compared to other theories, UTAUT model is preferred to examine behavioural intention to adopt technology has been proven to bring better viability, validity and stability in technology adoption research (e.g Anderson and Schwager, 2004; Anderson and Schwager, 2006; AIAwadhi and Morris, 2008; and Zhou et al., 2010). DOI theory has been lacking of cohesion and not easy to apply reliably on new problems (Meyers et al., 1999) and Katz et al., (1963). Besides, diffusion is hard to measure as humans and human networks are complicated. Thus, it is difficult to determine what exactly led to the intention to adopt an innovation, (Damanpour, 1996). Moreover, traditional adoption models like DOI and TAM are more suitable to be used in examining the actual adoption of mobile banking

service instead of behaviour intention to adopt mobile banking service. Each technology adoption model has its own strength and weaknesses. TAM has advantages compared to TPB and DOI as it is simpler to explain adoption or behaviour intention to adopt an innovation, Phonthanukitithaworn et al. (2015). However, Legris et al., (2003), suggested that TAM to be more suitable and suitable in explaining and predicting actual usage or adoption of technology. To overcome the weakness and leverage on the strengths of each models, UTAUT is adopted in this study as it has been proven to be the most comprehensive model in predicting technology adoption behaviour, (Martins et al., 2014). Past studies have mainly examined internet banking or online banking; only limited research was done on mobile banking (Puschel et al., 2010; Suoranta and Mattila, 2004). Limited research was conducted on mobile banking payment system (Donner and Tellez, 2008). Maurer (2008) suggested that mobile banking service is considered at the infancy stage especially in the developing countries. Recent studies conducted in mobile banking also have conflicting results on the determinants that affect mobile banking adoption intention. Besides that, even there are studies carried out on mobile banking adoption, only limited studies being conducted in Malaysia (Cheah et al., 2011; Eze, Ten and Poong, 2011; Krishanan et al., 2015; Krishanan et al., 2017). Studies on behaviour intention to accept mobile banking were also overlooked as mentioned earlier as most of the past studies was focus on actual adoption rather then intention to adopt. Thus, limited literature was available in this area of research and this justify for further research on the mobile banking adoption intention behaviour in Malaysia.

The lack of studies on this topic resulted limited literatures and understanding about customers mobile banking adoption intention and the determinants which affect customers‟ intention to accept mobile banking in Malaysia. Research conducted in developed nation can be good references but might not reflect on the local environment. Hence, more research should be conducted to validate the results of past studies conducted abroad.

Determinants that affect the mobile banking adoption intention such as performance expectancy, effort expectancy, social influence, perceived financial cost and perceived risk could provide better perceptive on customers‟ behavioural intention to adopt mobile banking. Furthermore, different results and inconclusiveness of findings from past studies on this topic implied that mobile banking adoption intention need to be further examined. Luarn and Lin (2005) and Thyagarajan (2015) found perceived financial cost is a determinant that affects mobile banking adoption intention. However, according to Alsheikh and Bojei (2012) it is a subjective concept which differed among each individual bank customers. On the other hand, Ricardo et al. (2016) found that perceived financial cost is not a significant determinant that affects customers‟ intention in adopting mobile banking service. This finding is inconsistent with the past study results conducted by other researchers. (Featherman and Pavlor, 2003; Lu et al., 2011; Martin et al., 2014; Yang et al., 2012; Phonthanukitithaworn, 2015; Thyagarajan, 2015; Sindhu. S. and Srivastava, R.K. (2018). Besides that perceived risk prevent mobile banking adoption (Brown et al., 2003; Riquelme and Rios, 2010; Natarajan et al., 2010; Dasgupta et al., 2011; Javed Sarfaraz, 2017; Younes Lafraxo et al.; 2018) but Ricardo et al. (2016)

suggested that there are differences in behavioural intention during the pre and post adoption phase. Thus, these inconclusive findings in the literature warrants further research to study and understand the determinants that affect mobile banking adoption intention.

The prior internet banking expreince as moderating variable has been included in this study in view of the justification that most of the moderators used in the past study on mobile banking adoption or mobile banking adoption intention are age, gender, self efficacy, prior internet experience, voluntariness, income and education (Jaradat, M.R.M. and Faqih, K.M.S. 2014; Feras Fares Al Mashagbaa and Mohammad Othman Nassar, 2012; Hernan Riquelme and Rose Rios, 2010; Almamy Touray et al., 2013, Alkhaldi et al., 2018). Limited study has used prior internet banking experience as a moderator. Moreover, the findings from past studies on prior internet banking experience as moderator were inconsistent, Alsheikh and Bojei (2012). Shih and Vankatesh (2004) find that customers who use technology intensively will be able to embrace new innovation easily. This is further supported by Dyna, H.S. and Purwo, A.W. (2012) but contradicted with findings from Suoranta and Mattila (2004). Conflicting past results of prior experience in using internet banking service as a moderator on mobile banking adoption has further warrant the researcher to ascertain the moderating effect of prior experience of using internet banking that affect mobile banking adoption intention.

According to Tan, Evon and Leby, Jasmine (2016), understanding the intention to adopt mobile banking among the younger age group is important to attract this group of

creative, practical and entrepreneurial. They are bank‟s future main clientele group and a significant driver of banking revenues for banks in the future. Besides that, Egremont Group (2016) found building a strategy to focus on the 18-24 age group will have long term commercial benefit. Reuters (2018) mentioned that the potential market from this age group is huge with the purchasing power of USD44 billion. Thus, understanding the need of this group will ensure the long term sustainability and success of the banking service providers in the future.

In addition, efficient services provided by the support of internet have shifted conventional banking customers to internet banking and mobile banking service users. This is important to promote economic developments in Malaysia (Daud et al., 2011). Therefore, such phenomenon related to mobile banking adoption intention required further studies.

In short, the core objective of this study was to bridge the abovementioned literatures and practical gaps by examining the factors that influence mobile banking adoption intention with the moderating role of prior internet banking experience. The above investigation of the constructs was guided by the UTAUT theory.

1.3 Research Questions

This research is expected to address the following research question: -

1. What is university students perception toward intention to adopt mobile banking services?
2. What are the determinants that influence their intention to adopt the mobile banking services among university students?
3. Does prior internet banking experience moderate the relationship between the determinants of mobile banking adoption intention and behavioural intention to adopt mobile banking?

1.4 Research Objectives

The research objective is the backbone of the study where it explains the prime objective of a research. The objective of the current study is to find and explore the attitude of the Malaysian university students towards mobile banking services.

The objectives guides by the purpose of outline above consist of but are not limited to the following:-

1. To examine university students‟ intention to adopt mobile banking services.
2. To examine factors that influences the intention of university students to adopt mobile banking services.
3. To examine the moderating effect of prior internet banking experience on the intention to adopt mobile banking services among university students.

1.5 Scope of the study

The scope of study defines the parameters in which a study is undertaken. It provides the focus needed to carry out the research. In this study, the focus is to examine intention to adopt mobile banking and determinations of intention to adopt mobile banking among the young generation specifically the university students in Malaysia. Thus, university students in Malaysia will be the target population in this study. In Malaysia, the entry age of undergraduate student at university in Malaysia normally at the age of 19 after completed their Sijil Tinggi Pendidikan Malaysia, General Certificate of Education, A level or Matriculation program. Thus, university students in Malaysia comprise of undergraduate students of age range normally between 19-24.

1.6 Definition of Terms

Mobile banking can be subject to various interpretations. Thus, it is important to define the term to avoid confusion. According to Barness and Corbitt (2003), generally mobile banking is defined as a channel for customers to communicate with bank using a mobile device. Thus, for the purpose of this study, mobile banking is limited to the use of mobile devices for data communication and excludes voice or phone dial up communication.

1.7 Significance of the study

The extension of literatures on the UTAUT theory in this study has contributed to better understanding on the factors of mobile banking behavioural intention. Thus, this study is important for both researchers and practitioners. In general, this study has contributed significantly to the existing boundary of knowledge related to factors influencing mobile banking adoption intention. Researchers may find the results useful on studies on human behavior and how they may affect attitudes towards the adoption and use of an innovative service.

Mobile banking service adoption and usage rate is still comparatively low. Failure to expedite the mobile banking adoption and usage will affect the growth of the banking industry and long term economic development in Malaysia (Daud et al., 2011). Examining on the determinants that determine intention to adopt of mobile banking will provide better understanding on the mobile banking adoption behaviour of the younger generation who will be the next revenue driver for financial institutions such as banks. Thus, this study will also benefit the Malaysian banking institutions and relevant financial services providers as the findings will enabled banks to plan effective strategy to accelerate the adoption of the mobile banking services to enable them to better capture the market share of the young generation customers to ensure long term growth of the banking industry and economy of Malaysia.

1.8 Organization of the study

The research comprise of five chapters, Chapter One: which encompasses of background of the study, research objectives, problem statement, scope of the study, research questions and significance of the study. Chapter Two: comprises of a review of studies and research done by various researchers relevant to the area of current study. Chapter Three discusses the research process from collecting data to analyzing data, hypotheses/propositions development, research design, operational definition and instrumentation, data collection procedure and data analysis. Chapter Four presents the data analysis results and discuss the findings of the present study with a comparison to the findings of the past studies and conclusion of this study is also made in this chapter. Chapter Five provide the synopsis of this study and emphasized some theoretical and practical contributions through this study. While explaining limitations in this study, it also makes recommendations related to the study as well as recommendations for future research and ends with some concluding remarks.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction:

This chapter discusses on literatures relevant to internet banking and mobile banking adoption, determinants of mobile banking adoption among university students in Malaysia. This review starts with an overview of university students in Malaysia; the next section discusses about the important of mobile banking adoption among young generation; followed by the determinants of mobile banking adoption in Malaysia. The last section will present a summary of literature related to the determinants of mobile banking adoption intention.

2.2. Generation Y and Generation Z, the Future Revenue Driver of the Banking Business

There are many age group definition of Generation Z. Oblinger and Oblinger (2005) regarded Generation Z group as post-millenniums and were born from year 1995 till present (age 24 and below presently). Reeves and Oh (2008) defined this generation as those who were born after year 2001 till present (age 18 and below presently). Huffingtonpost (2016) defined Generation Z as the demographic cohort following the Millennials, known as Post-Millennials, the iGeneration or the Homeland Generation. Generation Z is exposed to usage of the internet since very young age and is typically comfortable with technology. They interact actively on social media. The birth years of this group ranging from the mid-1990s to early 2010s. Goldman Sachs, an investment

bank in its "Golman Sachs Chart of the Generations" defined Generation Z as those were born after year 1998 or age 21 and below presently (Edwards, Jim., 2015), whereas Randstad Canada (2016), a human resources consulting firm defined Generation Z as those born between year 1994-2010 (age in between 9 - 25 presently). According to Brotheim (2014), Generation Z will be better future employees as they are comfortable with technology which is pre requisite in today employment environment. Generation Z are also more open to new ideas. Levit, Alexandra (2015) opined this cohort prefers personal touch and is familiar with social media and technology that prepared them to fit better into the global business environment.

Despite the target population of this study is the university students in Malaysia but the Generation Z concept is also discussed here as the age range of the undergraduate students is normally below 24 which is coincide with the age definition of Generation Z by Randstad Canada (2016) which suggested that the age of Generation Z is between 9 - 25 presently as per above discussed. This is to relate the university students in Malaysia and the Generation Z to emphasize on the important of this study as there is a lot of focus on this generation lately world wide due to the potential economic contribution from this group. Reuters (2018) reported that the Generation Z has an annual purchasing power of USD 44 billion. Thus, many banking institutions have started to focus on this group and treat the young generation seriously. This also emphasized again the significance of this study in both perspective of academic and practical contribution.

2.3. Mobile banking: Opportunities and challenges for financial sector

Mobile banking technology will enables banks to gain benefits from this virtual platform. The benefits of this platform include portability, reduced cost, convenience, wider customer reach, secured and accessibility (Agwu and Carter, 2014). Current global trends implied that mobile banking technology is important to capture the market of the younger generation as the mobile phone technology has impacted the life of young generation in terms of work, communication and education, (Regine, 2005).

Boston University Medical Centre (2015) commended that mobile phones are available easily today. Children are using mobile phone at very young age. Generation Z comprised of 26 percent of the U.S. population, which was the largest group of the total U.S. population in 2015. Recent research by Blomberg (2018) found that Generation Z now made up of 32 percent of the world population and will outnumber the millennial generation in a year time. Generation Z grew up with smart phones and about 98 percent of Generation Z own a smart phones in 2017 and 76 percent of 15-17 years old cohort own a smart phone (Mediakix, 2018).

Eileen Wu, technical recruiter of Glassdoor, highlighted that Generation Z has been living with tech devices, the internet, and social media, they are advanced and familiar with technology innovations, playing on smart phones, shopping online, and using Snapchat to communicate. Generation Z will put across the enthusiasm for new technologies in their careers and help to expedite on digital innovation usage, integration

between social media and business, and providing innovative technical solutions." (John Ginovsky, 2015; Glassdoor, 2015).

J.D. Power (2015) found that the young generation, specifically the Generation Z, appreciates personal touch and also prefer mobile banking to online banking activities. They are likely to recommend their bankers to others. Thus, smaller banks are at the risk of losing this young generation market share if they failed to meet their expectations. On the other hand, the introduction of fintech innovations has provided impact on financial services and products since early 21st century. Daniel (2014) defined fintech as innovations in financial services, which provide new business models or operations plan to run business that generates profits and creates value for the customers in the financial services industry. Alt, R., Puschmann, T (2012), suggested that fintech solutions can be categorized into five main groups which include (1) innovation solutions for the banking and insurance industry; (2) solutions to support business processes like financial data, investment, financing and payment. (i.e. mobile banking payment application); (3) solutions to support business to business (B2B), business to consumer (B2C) and customer to customer (C2C) (i.e. Mobile banking application is an example of B2C); (4) solutions according to various market position (i.e personal finance management system); and the last group (5) solutions by customer segment like commercial banking, private banking or mass market (i.e. Telemetric based insurance). The banking industry is now adopting Fintech innovations derived from artificial intelligence and biometric applications.

Fintech emergence which operates on mobile phone platform has posed threats to the financial services industry. Banks are under pressure to provide a faster, simplified, lower cost and more efficient services by investing in the banking technology, innovation from improving their international payment platform using a mobile phone to applying for various banking services to attract and maintain customers at lower costs and better profits, (Emma Dunkley, 2016). Anna Irrena (2016), reported in efinancialnews on a recent study conducted by UBS in July 2016 across 24 countries, found that the risk and impact of fintech on the banking sector‟s revenue is real. UBS reported that banks need to accept technology innovation and digitalisation such as Fintech quickly, building partnerships and collaboration to capitalize on opportunities in improving revenues and efficiency while alleviating the disruptive threat. In contrast, banks that are slow in adapting and investing on fintech are at risk of losing their competitive advantage, market positioning and ultimately their market share.

Bank Negara Malaysia (BNM) has also taken various measures in responding to the above phenomenon. BNM Governor, Dato‟ Muhammad Bin Ibrahim highlighted that fintech as an alternative banking services delivery channel, is challenging the existing banking business operations and practices. Transaction costs will be lowered and banks are at the risk of losing 10 percent to 40 percent of their revenue by 2025 due to the fintech innovations. He has also recognised to overcome the challenges, the banking sector needs to embrace the fintech innovations as an opportunity. Hence, BNM has initiated the Financial Technology Enabler Group (FTEG), a group of cross functional expertise professionals that act as the central point of contact on fintech related inquiries;

including rulings, guidelines and the fintech adoption related matters by the FSI sector in June 2016. This is followed by announcing the regulatory framework discussion paper for fintech in July 2016 (Ng, Fintan 2016).

Over the years, adoption of banking technology has brought various benefits to the banking industry in Malaysia. BNM has been supporting this advancement and development on many areas including payments platform, agent banking, internet banking, Islamic finance, money exchange and remittances services. Major local banks like Maybank, CIMB Bank, RHB Bank and Ambank have made significant investment to implement various digital innovation strategies to embrace fintech in their daily banking operations. Areas of focus including mobile banking, lending, payments, asset management, financial inclusion, Islamic finance, security, cash management, IOT, big data, loyalty and rewards, identity, security & document management using Blockchain; Remittances and P2P (Fong, Vincent 2016). CIMB Bank, the leading local Malaysian bank has become the first bank in Malaysia to join the Ripple blockchain based payment network recently. This has enabled the Bank‟s clients to perform international cross border payment via their mobile banking platform securely at lower cost and faster speed. This digital banking innovation has bring swift and better cost-efficient solutions to the CIMB banking clients across ASEAN. (Fintech News Malaysia, 2018).

J.D. Power (2015), the university students are important young customers that will drive the next wave of growth in the banking business, understanding and capturing them early will enable banks to build long-term relationships, increased loyalty and also to capture better wallet share of the business. As earlier mentioned, Reuters (2018) reported that Generation Z has an annual purchasing power of USD 44 billion. Thus, many banking institutions have started to treat the young generation seriously. Infosys has also launched a digital banking solution customised for the young people age range 12-18, called Finacle Youth Banking as the young generation will be the future revenue drivers of the financial services sector and their preference of mobile banking as banking delivery channel be studied carefully to better prepare for the future banking business of tomorrow.

2.4. Determinants of Intention to Adopt Mobile Banking

Adoption of mobile banking service is closely associated with account balance enquiry, funds transfer, paying bills and buying airtime via mobile (Ndumba, Wangari and Willy, 2014). Debasish and Dey (2015), reported that mobile banking services has value added to the existing services delivered to the consumers. A diversified types of banking services such as enquiry of account balance, credit alert, debit alerts, alerts of minimum balance and bill payment, transaction history and information requests on exchange rates are available through the mobile banking service. Mobile banking has advantages in terms of wide service coverage as customers can adopt mobile banking services as long as they own a mobile device that can send or receive SMS. Flexibility, interactivity and better accessibility using mobile banking services as compared with the conventional

banking channels and non-mobile banking services. Similarly banking services delivered through mobile banking method are faster compared to the non-mobile internet banking system.

According to Eze, Ten and Poong (2011), personal innovativeness, perceived risk, cost and social influence are some of the key determinants that affect consumers‟ decision to adopt mobile technology. Personal innovativeness of the individual has the ability to handle high levels of doubtfulness and they have the capability to cope with accepting the mobile technology. Research conducted by Li & Zhang (2010) found consumers past experience is also a factor influencing their decision to use mobile banking.

According to Yan and Yang (2015), trust is one of the determinants that encourage mobile payment adoption. Trust is considered as a significant factor influencing mobile banking adoption. (Witeepanich et al., 2013). Past studies conducted by Lanseng and Andreassen, 2007; Pavlou, 2003; Poon, 2008; Sohail and Shanmugam, 2003, found that trust is a significant factor compared to factors like ease-of-use and usefulness of technology in the banking industry towards adoption of mobile banking for online shopping in Malaysia. Financial risk, performance risk, psychological risk, community risk, time risk, and physical risk are other risk factors which have been considered as constraints by bank consumers when conducting electronic transactions via mobile gadgets. Study in Singapore has suggested that the perceived usefulness, social norms and risks are determinants which affect the mobile banking services adoption (Kazi and Mannan, 2013).

Alafeef, Singh and Ahmad (2011) examined the role of personal factors on adoption of mobile banking service. Education levels, trust, limited benefits, difficult to use and low income level are determinants that influence mobile banking adoption. Low level of education is perceived to have an important influence towards the non adoption and usage of mobile banking applications. Age, gender and income are factors perceived to have positive relationship with the mobile banking adoption. Demographic factors and personal innovativeness also played a significant role in influencing mobile banking adoption.

According to Oluoch, Abaja, Mwangi and Githeko (2013), perceived usefulness has a positive influence on the mobile banking adoption while the negative influence has occurred in the perceived risk towards using mobile banking services. Communication and demographic variables of the consumers have significant influence on the mobile banking adoption. Mobile phone coverage could also influence the mobile banking adoption among consumers (Aker and Mbithi, 2010).

The determinants that influence mobile banking adoption by integrating diffusion of innovation with attitude were studied by Dash, Bhusan and Samal (2014). The results showed that adoption of mobile technology is an alternative method to deliver banking services to the consumers. Dash, Bhusan and Samal (2014) found that banks are exploring mobile technology to empower the customers and mobile network operators are collaborating with bankers with the aim to reduce cost of operation for the banks.

Perceived usefulness has been known as one of the most important factors for mobile banking adoption. Banking service providers should build and develop mobile banking applications that users will find practical to use these applications. Past studies (e.g. Yu, C.S., 2012; Zhou, T., Lu, Y., and Wang, B., 2010) have adopted Unified Theory of Acceptance and Use of Technology (UTAUT) to anticipate mobile banking service adoption intention. Social influence, perceived creditability and perceived financial cost have significantly influenced behavioural intention to adopt mobile banking. Gender has significantly moderated the influence of the performance expectancy and the financial cost on behavioural intention to adopt mobile banking. Apart from these, Yu, C.S. (2012) found that age moderated the influence of facilitating conditions and perceived self efficacy on mobile banking adoption.

Amin, H. et al. (2014) opined that perceived ease of use, perceived usefulness and perceived religiosity are factors that influence on online Islamic banking adoption. Besides that, the consumer behaviour, acceptance and mobile banking adoption strategies were examined by Balabanoff (2014). He found that mobile banking adoption could be affected by attitude, perceived behavioural control and subjective norms.

Recent study by Thyagarajan (2015) found trust, perceived ease of use, perceived cost, perceived reliability, perceived usefulness, perceived ease to use, facilitating conditions and social influence are determinants of mobile banking adoption.

Barriers to M-commerce (including mobile banking) adoption in developing countries were studied by Rahman (2013). He found that lack of literacy and conflict of interest between the telcos and banks are the key barriers to mobile banking adoption.

Perceived ease of use, perceived usefulness, relative advantage, personal innovativeness and perceived risk are some of the factors which are positively associated with the behavioural intention to adopt the mobile banking system (Cheah et al., 2011).

According to Sripalawat, Thongmak, and Ngramyard (2011), subjective norm is an important determinant in influencing the adoption of mobile banking. Shanmugam, A., et al., (2014) highlighted that perceived benefit; perceived usefulness and perceived credibility were determinants influencing individual behavioural intention to accept mobile banking services. Compatibility, subjective norm, perceived trust and perceived cost are found to affect behavioural intention to adopt mobile payment service (Phonthanukitithaworn et al., 2015).

Chung and David Holdsworth (2012) opined that perceived risk, trustworthiness, compatibility observability, trialability, relative advantage, complexity are factors found to have an influence on behavioural intentional to use mobile commerce. Recent research conducted by Boonsiritomachai, W. & Pitchayadejanant, K. (2017) found hedonic behaviour has influenced behavioural intention to adopt mobile banking while internet security has a negative effect on intention to adopt mobile banking.

Muñoz-Leiva, F. et al. (2017) opined that perceived ease of use, perceived usefulness, user attitude, social image are important factors that influence intention to adopt mobile banking whereas perceived trust has a negative affect on the intention to adopt mobile banking.

Athapol R. and Suphitcha W. (2017) found that compatibility, perceived usefulness, and self-efficacy significantly and positively influence customer intention to adopt the services in generation X and generation Z. Interestingly, social influence has significantly influenced influenced the mobile banking intention among generation Z only.

Similarly, Javed Sarfaraz (2017) found that effort expectancy, performance expectancy, perceived risk predict mobile banking adoption intention. Besides that, the study also found that UTAUT would be an appropriate model use to explain the behavioural intention to adopt mobile banking.

Besides, Younes Lafraxo et al. (2018) found that effort expectancy, performance expectancy, social influence and security are determinants that influence intention to adopt mobile banking. In a different study conducted by Saad Ghaleb Yaseen, Ihab Ali El Qirem, (2018), they found effort expectancy, social influence, and perceived e-banking services quality predicts intention to adopt mobile banking. However, performance expectancy and hedonic motivation have no relationship with the intention to adopt mobile banking.

Sindhu. S. and Srivastava, R.K. (2018), another recent study found that security, computer self-efficacy, perceived ease of use and perceiced financial costs influence mobile banking adoption intention.

2.4.1 Internet Banking Experience as Moderator

A moderating variable is introduced to examine its influences between the dependent variable and independent variables by reducing or strengthening the relationship (Baron and Kenny, 1986; Sekaran and Bougie, 2010).

Agarwal and Prasad (1999), found that prior experiences in using related technologies could influence the adoption of information technology innovation. Past study also show that prior experience in using internet banking moderates the behavioural intention in mobile banking service adoption (Suoranta and Mattila, 2004). Research conducted by Ratten (2011) suggested that users with more experience using new technologies are more prone to adopt mobile banking service. Francisco Liébana-Cabanillas et. al. (2014) opined that previous experience of using similar tool increases intention of using mobile payment service.

Table 2.1 Summary of mobile banking adoption determinants, behavioural intention to adopt mobile banking and moderator literatures. (Page 36-44)

Author	Study Conducted	Performance Expectancy	Effort Expectancy	Social Influence	Perceived Financial Cost	Perceived Risk	Internet Banking Experience	Other factors / Remarks
Agarwal and Prasad (1999)	Information technology adoption intention in USA.						√	Prior experiences with related technologies influence the adoption information technology innovation.
Suoranta and Mattila (2004)	Mobile banking adoption intention in Finland.						√	Prior experience in using internet banking moderates the behavioural intention to mobile banking adoption.

Luarn and Lin (2005)	Mobile banking adoption intention in Taiwan.	√	√		√			Perceived self efficacy, financial cost, creditability, perceived ease of use, and perceived usefulness are determinants influencing behavioural intention to adopt mobile banking service.
Ja-ChulGu et al. (2009)	Mobile banking adoption intention in Korea.	√	√					Perceived self efficacy, perceived ease-of-use, perceived usefulness and trust are factors influencing individual intention to adopt mobile banking service.
Liz & Zhang (2010)	Mobile banking adoption intention in China.						√	Consumer experience is a determinant that influence customers‟ decision to use mobile banking
Ratten, V. (2011)	Mobile banking adoption intention in Australia.	√		√				Media exposures, modelling of other, Performance expectancy, perceived self efficacy and outcome values are factors of affecting mobile banking service adoption intention.
Cheah et al.	Mobile	√	√			√		Perceived usefulness,

(2011)	banking adoption intention in Malaysia.							perceived ease of use, relative advantages, and personal innovativeness positively associated with the mobile banking adoption intention. Perceived risks negatively associated with the mobile banking adoption intention.
Eze, Ten and Poong (2011)	Mobile banking adoption intention in Malaysia.	√	√	√	√			Perceived trust, perceived ease of use, personal innovativeness, perceived cost, perceived usefulness and social influence are significant determinants of mobile commence usage intention.
Ratten (2011)	Mobile banking adoption intention in Australia.						√	Users with more experience using new technologies are prone to use mobile banking.
Kim-Choy Chung and David K. Holdsworth (2012)	Mobile commences adoption intention in Kazakhstan,	√				√		Perceived risk, trustworthiness, observability, trialability, compatibility, complexity, relative advantage are

	Morocco and Singapore.							factors influencing behavioural intentional in mobile commerce adoption among Generation Y.
Dyna, H.S. and Purwo Adi, W. (2012)	Mobile banking adoption intention in Saudi Arabia.					√	√	Prior experience, perceived usefulness, trust, influence on intention to use positively. Perceived risk has negative effect on intention to use. Meanwhile perceived ease of use have positive influence but not significant on intention to use.
Witeepanich et al. (2013)	Mobile banking adoption in Thailand.			√				Social influence, trust, facilitating conditions, user perception, and user demographic are determinants of mobile banking adoption. Trust is a key factor that influences adoption of mobile banking significantly.
Kazi and Mannan (2013)	Mobile banking adoption intention in	√	√	√		√		Social influence, perceived risk, perceived usefulness and perceived ease of use influence mobile banking

	Pakistan.							adoption intention. Perceived usefulness and perceived risk has the most important impact on the mobile banking adoption intention.
Rahman (2013)	Mobile banking adoption in Bangladesh.					√		Level of literacy, trust and the regulation of the government have influenced on mobile banking adoption.
Amin et al., (2014)	Online Islamic banking adoption in Malaysia.	√	√					Perceived usefulness, perceived ease of use, perceived religiosity are factors influencing online Islamic banking acceptance.
Dash, Bhusan and Samal (2014)	Mobile banking adoption in India.			√				Compatibility, trialability and mimetic force are good predictors of mobile banking adoption.
Arunagiri Shanmugam et al. (2014)	Mobile banking adoption intention in Malaysia.	√						Perceived usefulness, perceived benefit and perceived credibility were the determinants influencing individual behavioural intention to adopt mobile banking service in

								Malaysia.
Balabanoff (2014).	Mobile banking adoption intention in South Africa.	√		√		√		Attitude (risk, privacy, features & advantages), perceived behavioural control (influenced by self efficacy and facilitating condition) and subjective norms influence mobile banking adoption intention significantly
Francisco Liébana-Cabanillas (2014)	Mobile payment adoption intention in Spain.						√	Previous experience of similar tool increases intention of use mobile payment in VSN (Virtual social network).
Yan and Yang (2015)	Mobile banking adoption intention in China.	√	√					Perceived usefulness, perceived ease of use, ubiquity and the structural assurance influence trust which further affect the mobile banking adoption intention.
Thyagarajan (2015)	Mobile banking adoption in India.	√	√	√	√			Perceived cost, perceived ease of use, perceived credibility, perceived usefulness, ease of use, trust, facilitating conditions

								and social influence are key determinants influencing mobile banking adoption.
Karma, Ibrahim and Ali (2015)	Mobile banking adoption intention in Sudan.		√					Efficient and convenient services are key determinants of mobile banking adoption intention.
Phonthanukitithaworn et al. (2015)	Mobile payment service adoption intention in Thailand.			√	√			Compatibility, subjective norm, perceived trust and perceived cost influence behavioural intention to adopt mobile payment service.
Boonsiritomachai, W. & Pitchayadejanant, K. (2017)	Mobile banking adoption intention in Thailand.			√		√		The study opined hedonic behavioural influence mobile banking adoption intention among Generation Y and security negatively effect intention to adopt mobile banking.
Muñoz-Leiva, F. et al. (2017)	Mobile banking adoption intention in Spain.	√	√	√				Perceived usefulness, perceived ease of use, user attitude, and social image are factors influencing intention to adopt mobile banking. Perceived trust

								negatively affect the intention to adopt mobile banking.
Javed Sarfaraz (2017)	Mobile banking adoption intention in India.	√	√			√		Performance expectancy, perceived risk and effort expectancy predicts intention to adopt mobile banking. UTAUT model fit to explain intention to adopt mobile banking.
Athapol R. and Suphitcha W. (2017)	Mobile banking adoption in Thailand			√				Compatibility, perceived usefulness, self-efficacy and social influence are determinants of mobile banking adoption intention.
Younes Lafraxo et al. (2018)	Mobile banking adoption intention in Morocco.	√	√	√		√		Performance expectancy, effort expectancy, security and social influence are determinants of mobile banking adoption intention. However, trust, facilitating conditions and perceived risk does not influence mobile banking adoption intention.

Saad Ghaleb Yaseen, Ihab Ali El Qirem, (2018)	Mobile banking adoption intention in Jordan.		√	√				Social influence, effort expectancy and perceived e-banking services quality influence mobile banking adoption intention. Performance expectancy and hedonic motivation are not predictors of mobile banking adoption intention.
Sindhu. S. and Srivastava, R.K. (2018).	Mobile banking adoption intention in India.				√			Security, computer self-efficacy, perceived ease of use and perceiced financial costs influence mobile banking adoption intention.

2.5 Theories Related To Explain Adoption of Innovation

2.5.1 Social Cognitive Theory (SCT):

Social Cognitive Theory (SCT) has operated as the interacting determinants which have also bidirectionally influenced by each other. In SCT, people have neither driven by the inner forces nor controlled by the outer environment. It has functioned as contributors to their own motivation, development and behaviour within the single network of influences which are reciprocally interacting with each other. In social cognitive theory, thoughts have considered as the brain processes rather than the entities of separate psychic. In the perspective of SCT, the social factors have played an influential function in the development of cognitive. According to Bandura, A. (1986). SCT is applicable in studying how social influence impact on innovation adoption intention in this study.

Some past empirical researches on mobile banking adoption were conducted using SCT (e.g. Chan, S.C. and Lu, M.T, 2004; and Ratten, 2007). Ratten (2007) found exposure from media, modelling of other, self-efficacy, outcome expectancy and outcome values have influenced mobile banking service adoption intention.

2.5.2 Theory of Reasoned Action (TRA):

Theory of Reasoned Action (TRA) has derived from theory of learning and assumed that behaviour towards the particular object which has brought near by the intention in order to perform that behaviour. TRA had originally introduced in the social psychology field to explain the behaviour of an individual and has showed the strongest predictor of actual behaviour. (Alsughayir and Albarq, 2013). Gu, Lee and

Shuh (2009) have conducted mobile banking adoption study using TRA and TAM frameworks.

2.5.3 Theory of Planned Behaviour (TPB):

Theory of Planned Behaviour (TPB) has been applied to explain a wide variety of behaviours over the years, including tourism (Al Muala, 2010), internet banking (Lee, 2008) and e-commerce (Crespo, 2008). TPB has been considered as supported theory of social psychology with respect to predicting the behaviour of human. TPB is an expansion of TRA by adding together the construct of perceived control of behaviour (PBC) (Sommer, 2011). TRA is a cognitive psychology theory within an expectancy value framework and a social psychology theory explaining the human decision making process.

Theory of Planned Behaviour explained that performance is decided by the individual"s intention or plan to carry out the actions. Intention is decided by three determinants; attitudes toward the behaviour, which are informed by beliefs needed to engage in the behaviour subjective norm, social pressures to carry out or not to carry out the behaviour and perceived behavioural control that refers to people's view of their capability to carry out certain behaviour (Ajzen, 1991). In general, the stronger is the intention to commit an act, the more inclined should be its act. However, a behavioural intention can find appearance in behaviour only if the behaviour in question is under volitional control (Ajzen, 1991). For example, if the person can make a decision at his will to carry out or not to carry out the behavioural intention. Although some behaviour met this requirement quite well, the performance most depends at least to some degree on such non-motivational factors as availability of fundamental opportunities and resources in terms of time, skills, money and

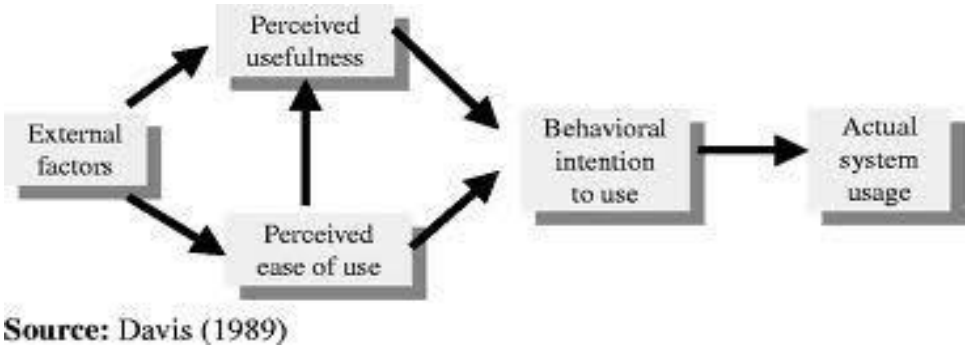
cooperation (Ajzen, 1985). Generally, these factors correspond to individual‟s actual control over the behaviour.

Past studies on mobile banking adoption (Luarn and Lin, 2005; Masinge, 2010; Sripalawat, Thongmak, and Ngramyard, 2011) were conducted built on the TAM and TPB frameworks.

2.5.4 Technology Acceptance Model (TAM):

Technology Acceptance Model (TAM) proposed by Davis (1989) is widely adopted model to explain adoption behaviour. An expansion of the Theory of Reasoned Action (TRA) developed by Fishbein and Arjen (1975) and Theory of Planned Behaviour (TPB) (Arjen, 1991), TAM interpreted the association between beliefs (perceived usefulness and perceived ease of an information) and users‟ attitude, intentions and actual usage or adoption of a system.

The Technology Acceptance Model is illustrated as below:



Source: Davis (1989)

Figure 2.1: Technology Acceptance Model (TAM)

Source: Davis (1989)

Essentially an information system theory describe how users come to believe and adopt of a technology, TAM, suggests a number of determinants that influence a user when presented with new technology. Perceived usefulness (PU) defined by Fred Davis (Davis, 1989) as the extent to which a person believes that by adopting a particular system would increase his or her job performance. Perceived Ease of Use (PEOU) is defined as the extent to which a person believes that adopting a particular system would be effort free.

The adoption behaviour is decided by the belief, which consecutively is decided by the perceived usefulness and perceived ease of use of the system (Davis, 1989). Researchers such as Adams, Nelson and Todd 1992; Davis 1989; Hendrickson, Massey and Cronan 1993; Segars and Grovar 1993; Subramanian 1994; and Szajna 1994 have simulated Davis‟s original study (Davis, 1989) to present empirical evidence on the associations that present between usefulness, ease of use and system use.

Information technology and systems researchers have provided empirical supported to TAM model to explain technologies adoption like voice mail, e-mail, software, groupware and the World Wide Web (Adams, Nelson and Todd, 1992; Davis, 1989; Lederer, Maupin, Sena and Zhuang, 2000; Mathieson, 1991; Taylor and Todd, 1995a; Venkatesh et al., 2003).

Information system researchers trust that the TAM with its varied versions and improvement (i.e. TAM2) could explain an individual‟s intention to use information system (IS) (King and He, 2006; Legris et al., 2003). Researchers

such as Daud et al. (2011); Amin, H. et al. (2008) have also adopted TAM model in mobile banking adoption related studies in Malaysia.

Further to the TAM‟s perceived ease of use (PEOU) and perceived usefulness (PU), IS research also relates several other determinants that influence IS adoption decision. Individual‟s trust (T) as well as their computer self-efficacy (CSE) in using IS influence individual‟s decision to engage in IS (Davis, 1989; Gefen et al., 2003; Hasan, 2006). Computer self efficiency is known to be an individual‟s belief about his or her competency to use a technological innovation to complete a specific task successfully, has been quoted as a factor in deciding an individual‟s intention to adopt the IS. Efficient use will not be achieved if there is a short of individual CSE (Compeau and Higgins, 1995; Hassan, 2006) Trust is related to user‟s worry on problems like computer hacking, computer security; computer viruses and identity theft involves the exchange of private and individual information online. Thus, trust remains a complicated concept for which researchers are still trying to understand better in the on line banking environment (Corritore et al., 2003; Wang et al., 2003).

Trust could be a factor built into the framework of IS as an inducing variable to reduce individual‟s worry and heighten their inclination to use IS (Gefen et al., 2003; Wang et al., 2003).

Past research by Daud, Kassim, Said, and Noor (2011) on mobile banking adoption were conducted based on the TAM and found that perceived usefulness, perceived credibility and awareness had an influence on individual mobile banking adoption intention.

2.5.5 Underpinning Theory: - Unified Theory of Acceptance and Use of Technology (UTAUT Theory)

Venkatesh et al., (2003) elaborated Unified Theory of Acceptance and Use of Technology (UTAUT) as a combination based on prior technology acceptance models. UTAUT is made up of four key constructs based on eight technology acceptance models which aim to explain technology acceptance. Specifically, the UTAUT is based on the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behaviour (TPB), the combined TAM and TPB, the model of Personal Computer Utilization, the Innovation Diffusion Theory and the Social Cognitive Theory (Attuquayefio and Addo, 2014). UTAUT model uses behavioural intention as a predictor to explain technology usage behaviour. The UTAUT had four key constructs namely performance expectancy, effort expectancy, social influence, and facilitating conditions that affect behavioural intention to adopt a technology (Taiwo and Downe, 2013).

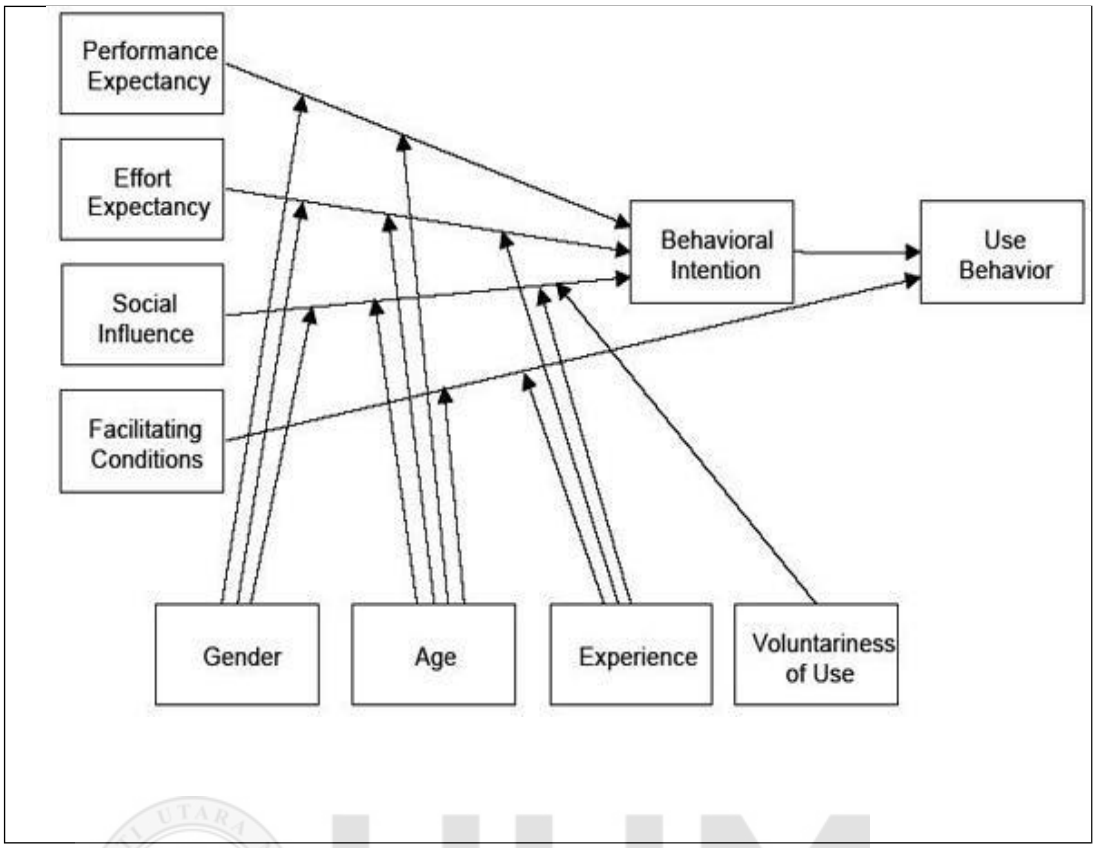


Figure 2.2: Unified Theory of Acceptance and Use of Technology (UTAUT)

Source: Vankatesh et al., (2003)

Performance expectancy is described as the extent to which adopting a technology will bring advantages to consumers in performing certain activities, which means degree to which the individuals believe that the use of the technologies will lead to performance gains. This may also be viewed as the perceived usefulness of the technologies. *Effort expectancy* is the extent of ease associated with consumers‟ adoption of technology or the ease of use of the technologies. *Social influence* is the extent to which consumers perceive that is important on others (e.g., family and friends) believes they should use a particular technology. Lastly *facilitating conditions* refer to consumers‟ view of the organizational resources and technical

support are in placed to carry out a behaviour (e.g., Brown and Venkatesh 2005; Venkatesh et al. 2003).

Based on UTAUT, performance expectancy, effort expectancy, and social influence are theorized to effect behavioural intention to adopt a technology, while behavioural intention and facilitating conditions conclude technology use. Individual difference variables, namely age, gender, voluntariness and experience are theorized to moderate various UTAUT relationships.

Yu, C.S. (2012) conducted empirical study on adoption of mobile banking based on the UTAUT Theory and found that Social influence, perceived financial cost, performance expectancy and perceived credibility influenced on mobile banking service adoption intention among individual.

2.5.6 Diffusion of Innovation Theory (DOI):

Rogers (1995) introduced DOI theory to explain innovation acceptance for both individual and organization. Innovation diffusion theory is widely used in some disciplines such as education, sociology, information technology etc. The Diffusion of Innovation Theory (DOI) has involved five characteristics of innovation such as relative advantage, complexity, trialability, observability and compatibility. Rogers (1995), suggested that relative advantage is the level to which an innovation is perceived to be better than the idea it supersedes; complexity refers to the level to which an innovation is perceived as rather complicated to appreciate and use; trialability refers as the level to which an innovation experimented on a limited basis; observability refers to the level to which the result of an innovation are noticeable to

others and lastly compatibility refers to the level to which an innovation is perceived as consistent with the existing values, past experience and needs of potential adopters.

DOI theory has argued that the potential users have made decisions to adopt or decline on innovation which is based on the idea which they have about the innovation (Lee, Hsieh and Hsu, 2011).

Recent studies using DOI to investigate mobile banking adoption suggested that relative advantage, compatibility, and observability have positively influenced on the mobile banking adoption. Whereas impact by trialability and complexity on mobile banking adoption are insignificant, perceived risk has shown negative influence on the mobile banking adoption. (Al-Jabri and Sohail, 2012).

2.6 Summary:

Mobile banking has attracted attention worldwide and many studies were undertaken to examine the adoption behaviour and determinants that influence the mobile banking adoption. This study aimed to develop a research framework that aim to provide better knowledge and understanding of mobile banking adoption intention and the determinants that influence its adoption among individual users.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

This chapter elaborates the research methodology adopted to conduct this study. The chapter is sub-divided into five sections namely; theoretical framework and hypothesis development, research design, research population, sampling technique and sample, developing research instrument and data analysis techniques.

3.2. Theoretical Framework & Hypothesis Development

Past studies had researched on the adoption of internet banking that include internet banking adoption in Malaysia (e.g. Amin, H., 2007; Raju et al., 2007; Syed.S et al., 2009). However, limited studies have been performed to examine the intention to adopt mobile banking and similarly the determinants that affect the intention to adopt mobile banking.

Limited research has been done on the mobile banking adoption in Malaysia particularly among Malaysian university students. Hence, knowledge about the intention to adopt mobile banking among Malaysian university students such as the university students is vital. The present study aims to bridge the research gap by providing knowledge to fill the gap in literature and provide a better understanding about intention to adopt mobile banking among Malaysian university students in general and specifically among the university students.

Based on the literatures discussed in Chapter 2, a research framework for the purpose of researching on the behavioural intention to adopt mobile banking and the

moderating effect of internet banking experience that is perceived to moderate the association between the independent variables and dependent variable is developed based on the UTAUT technology acceptance model. UTAUT consist of of four main constructs which including performance expectancy, effort expectancy, social influence and facilitating conditions that affect technology adoption behavioural intention.

The research framework of this study was developed by incorporating a trust-based construct "perceived risk" and a resource-based construct "perceived financial cost" to the UTAUT framework. Others constructs adopted in the research framework are performance expectancy, effort expectancy, and soacal influence. A contingency construct "prior internet banking experience" as moderator was also incorporated to the UTAUT framework.

Performance expectancy, effort expectancy, social influence, perceived financial cost and perceived risk are selected as determinants that influence mobile banking adoption intention in this study in view of limited past research on the abovementioned determinants of mobile banking service adoption intention among university students in Malaysia. Besides that the results of the past study was inconclusive and thus further study is required to understand the phenomena.

UTAUT model is preferred to examine behavioural intention to adopt technology due to its comprehensiveness compared to other theories and it has been proven to bring better viability, validity and stability in technology adoption research (e.g Anderson and Schwager, 2004; Anderson and Schwager, 2006; AIAwadhi and

Morris, 2008; and Zhou et al., 2010). Thus, UTAUT model is adopted in this study as it has been proven to be the most comprehensive model in predicting technology adoption behaviour, beside that the model has overcome the weakness and leverage on the strengths of other technogy adoption models, (Martins et al., 2014).

Performance expectancy:

Cheng et al. (2011) described performance expectancy as the degree to which a person think that adopting information systems could enhance job performance or the degree to which a person expects that using the system will help him or her to attain gains in job performance, (Venkatesh et al., 2003). Jambulingam, M. (2013) and Younes Lafraxo et al. (2018) found that performance expectancy is an important predictor of the behavioural intention to adopt mobile technology. In short, this means people are more likely to adopt a technology when they believe adopting the technology will help them to perform their job better. Hence, the following hypothesis is formulated.

H1: Performance expectancy is associated with the intention to adopt mobile banking in Malaysia.

Effort expectancy:

According to Mtebe and Raisamo (2014), effort expectancy is the extent of ease that is closely related with effective utilization of an information system. The effort expectancy is positively associated with the behavioural intention for usage of mobile banking, (Lin, 2011). Park et al. (2007) and Lu et al. (2009) also advocated that effort expectancy influence behaviour to use mobile technology. The hypothesis that effort expectancy influence the behavioural intention to use, as well as the actual

use of a technique or a technology, has been regularly formulated in previous studies (Arman & Hartati, 2015; Chang, Hwang, Hung, & Li, 2007). Formed on the above evidence, the following hypothesis is proposed.

H2: Effort expectancy is associated with the intention to adopt mobile banking.

Social influence:

Venkatesh et al. (2003) explained social influence is the extent to which an individual perceives the importance of others who think he or she should use a technology. Social influence happens when the consumer‟s behavior is influenced by others. Chong (2013) opined that the social influence include infleunce from peers, family and media that affects individual in decision to adopt a technology innovation. Zalewski (2010) opined that social influence can change an individual as a result of an actual and imagined presence of others and according to Dahlberg et al (2008) during the assessment of the acceptance of technological innovations, the social influence of the decision maker should be considered. Fan et al. (2005) suggested that users are more likely to recommend a service to others if they are satisfied with the service experience earlier and it was found that social influence has an important influence on mobile banking usage intention, (Talukder, M. et al., 2014). Thus, the following hypothesis is proposed.

H3: Social influence is associated with the intention to adopt mobile banking.

Perceived financial costs:

According to Yu, C.S. (2012), cost is a significant factors in determining behavioural intention to adopt any innovation. Perceived financial cost is the level to which a person believes that adopting mobile banking will incur costs or financial burden for adopting mobile banking, (Cruz et al., 2010). It was also suggested that perceiced financial costs is a key barrier in mobile banking adoption intention, (Cruz et al., 2010). Luarn and Lin (2005) opined that perceived financial cost has a negative influence on behavioural intention to use mobile banking. However, it is subjective as whether the costs to use mobile banking will influence negatively on the intention to adopt mobile banking among individuals, (Alsheikh and Bojei, 2012). Besides that, perceiced financial cost is identified as a significant predictor in mobile banking adoption intention among young persons which is relevant to this study where the target population is university students, (Koenig-Lewis, Nicole et al., 2010). Thus, the below hypothesis is proposed based on the above discussion.

H4: Perceived financial cost is associated with the intention to adopt mobile banking.

Perceived risk:

Perceived risk is individual belief of potential loss to be incurred in the pursuit of a desired result of adopting new technology such as mobile banking. It is a combination of uncertainty plus seriousness of result involved (Bauer, 1967). Peter and Ryan (1976) opined that perceived risk is the expectation of losses associated with a purchase and acts that inhibit a purchase behaviour. Past studies has supported that perceived risk has prevented mobile banking adoption (Brown et al., 2003; Riquelme and Rios, 2010; Natarajan et al., 2010; Dasgupta et al., 2011). Besides that,

it was found that perceiced risk has significanat infleucne in mobile banking adoption intention (Wessels, 2010). Building on the above discussion, the following hypothesis is proposed.

H5: Perceived risk is associated with the intention to adopt mobile banking.

Moderator:

A moderating variable is introduced to examine its influences on the association between the dependent variable and independent variables by reducing or strengthening the relationship (Baron and Kenny, 1986; Sekaran and Bougie, 2010). Agarwal and Prasad (1999), find that prior experiences with related technologies may have affect on the intention to adopt other technologies. Past studies like Charbaji and Mikdashi, (2003) and Rehman et al. (2012) found prior experience in using similar technology is an important determinant of behavioural intention to adopt a new technology.

Internet banking is an electronic payment enables bank customers to carry out banking activities remotely through the bank's website using internet which can be operated through personal computers or laptop.

Mobile banking is a service provided by banks that enable customers to perform banking transactions using mobile phones or tablets. It is designed specifically for mobile phone devices to enhance service quality experience. The application is specially designed to facilitate easy browsing and their navigation. Although the purpose of both internet banking and mobile banking facilities is same but its

functionality differs. Mobile banking can be operated using mobile banking apps, while internet banking is traditionally accessed through bank‟s website.

Suoranta and Mattila (2004) found regular desktop internet banking users will resist to change and more likely to continue to use the desktop internet banking service. Lee et al. (2003) suggest that internet banking may prevent customers from adopting mobile banking service. However, Shih and Vankatesh (2004) find that customers who use technology intensively are able to embrace future technology easily which was further supported by a more recent research conducted by Alalwan A.A. et al. (2015), they found that prior internet experience influence intention to accept mobile banking. This contradicted the finding of Suoranta and Mattila (2004).

Due to the above inconsistent findings, further study is required to understand the moderating effect of prior internet banking experience on intention to adopt mobile banking. Besides that, not many past studies examined how internet banking experience moderates the behavioural intention to adopt mobile banking. Thus, the moderating effect of prior internet banking experience on behavioural intention to adopt mobile banking was examined in this study.

H6: Internet banking experience moderates the relationship between performance expectancy and the intention to adopt mobile banking.

H7: Internet banking experience moderates the relationship between effort expectancy and the intention to adopt mobile banking.

H8: Internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking.

H9: Internet banking experience moderates the relationship between perceived financial costs and the intention to adopt mobile banking.

H10: Internet banking experience moderates the relationship between perceived risk and the intention to adopt mobile banking.

The proposed theoretical framework for the determinants (Figure: 3.1) that drive university student in Malaysia towards adopting mobile banking are described in the following section.

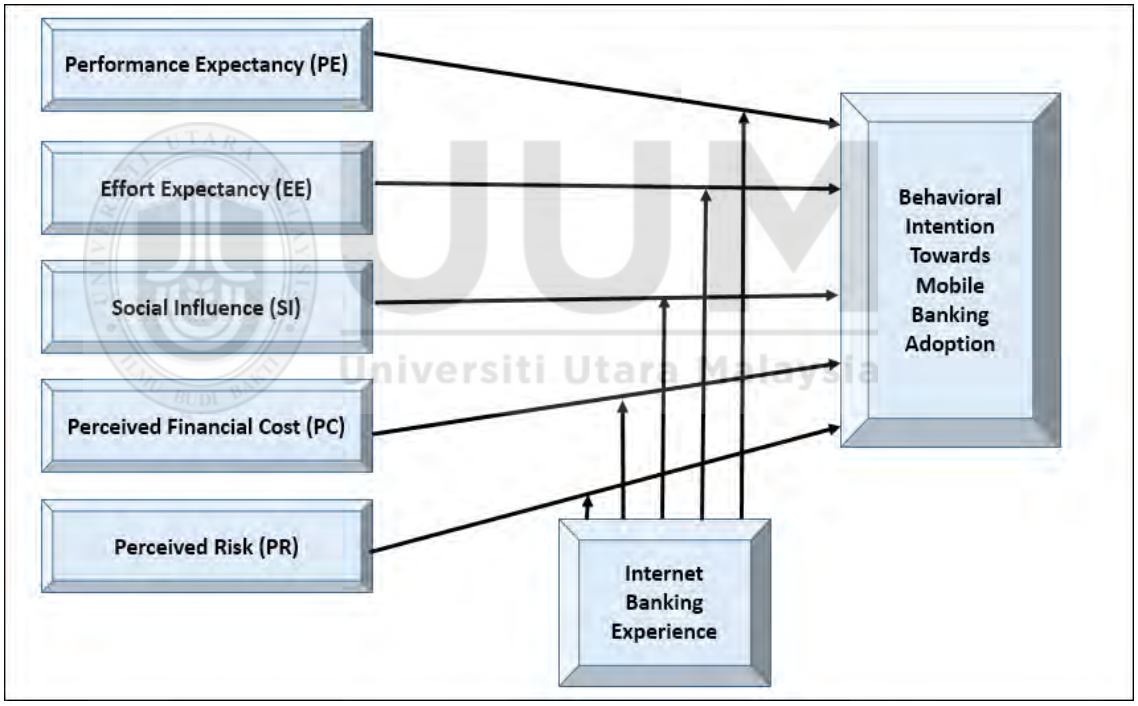


Figure 3.1: Theoretical Framework

3.3. Research Design

Research design is an outline defining the techniques for collecting and analyzing data (Burns and Bush, 2010). It is a preliminary preparation for carrying out a study and the purpose is to carefully plan the research that enable the researcher to provide answers to the research questions. It is a blueprint that gives a structure and direction to the research. It gives the general guidelines on how and what data must be gathered and which research methods to be used (Haig-Brown, 2003).

Quatitative research method using survey is adopted in this study. Quantitative approach is used to test a general theory (Saunders, Lewis, and Thornhill, 2009). Survey is normally used to collect data as this method enables large quantity of data to be collected in an economical way (Saunders et al., 2009). Qualitative research is mainly exploratory in nature and it is conducted to find out the primary rationale, opinions and motivations. It provides insights into the issue or helps to develop ideas or hypotheses for a potential quantitative research.

3.4. Population

3.4.1. Population of Study

This study aims to examine the intention to adopt mobile banking and identify determinants of mobile banking service adoption among the university students in Malaysia. The population of this study comprised of university students pursuing their undergraduate studies. Self-administered questionnaires were used to collect data from respondents who were students from Universiti Utara Malaysia (a public university) and Universiti Tunku Abdul Rahman (a private university) in Malaysia.

University students in Malaysia are being targeted by banks and financial services providers as potential customers. The population group here in this study are university undergraduate students comprised of the young generation who are the future revenue sources for the banking industry. Based on the data published by the Ministry of Education, the total number of tertiary students enrolled for undergraduate degree courses in public universities in Malaysia as of 31st December 2017 was 538,555 students. (Ministry of Higher Education, Malaysia, 2018)

3.4.2. Sample Size

Sample size is the subset of the target population. An optimal sample size helps to achieve a meaningful conclusion. If the sample is too small, it will lead to inaccurate findings. Contrarily, large sample size will be too difficult and costly to manage. Sample size is the subset of the target population. According to Roscoe (1975), determining a sample from its population for quantitative study requires larger than 30 respondents and lesser than 500 respondents. Barlett, Kotrlik and Higgins (2001) argued that when the target population in indefinable or quantifiably larger, it is proposed to involve sample size of between 200 - 300 respondents. Besides, a sample size should have a sampling error or precision level of +7 to -7 and when the population is more than 100,000, a minimum of 204 respondents are required, (Israel, 2009).

Krejcie & Morgan (1970) came up with an effective method of determining sample size by using a sample size determining table for a given population. The Krejcie and Morgan (1970) table suggested that a sample size of 384 is required to achieve a 95 percent confidence interval in generalizing to the sample population of 500,000. For this study, total number of undergraduate degree students in Malaysia is estimated at about 538,555 students in year 2017. Hence, this study had targeted two universities in Malaysia and adopted a sample size of four hundred (400) respondents (rounding up from the sample size of 384 suggested above) whereby two hundred (200) respondents were elected from each university to participate in this research.

3.4.3. Unit of Analysis

The unit of analysis in this study is the individual respondents who are university undergraduates from Universiti Utara Malaysia (UUM) and University Tunku Abdul Rahman (UTAR).

UUM and UTAR were selected in this study in view of the justifications that UUM represent the university students from the public university whereas UTAR represent the university students from the private university which both the universities have comparable number of students.

3.4.4. Pre Test and Pilot Test

Pre test and a pilot study were conducted to assess reliability of the instrument before the actual data collection work begins. Bryman and Bell (2011), opined that it is important to conduct pre test and pilot test to ascertain the instrument‟s content reliability and identify any problems related with the measures.

Pre test is conducted prior to the pilot study where questionnaires were thoroughly assessed by experts to ensure the questionnaires are simple, structured, grammatical errors free and easily understand. (Hair, et al., 2010). One of the objectives of pilot study is to test the reliability of constructs (Sproull, 2004).

Pre test in this study was conducted involving a senior banker and two academicians in the field of information technology and banking services. The feedback from these experts was positive and no improvement was required on the variables included in this study.

A pilot test was performed before the questionnaires were distributed to respondents. The purpose of pilot test was to assess goodness of measurements. A total of forty respondents representing 10 percent of total respondents were distributed to twenty respondents from each UUM and UTAR. All questionnaires were returned and subjected to data analysis to obtain feedback on reliability of instrument.

SPSS software was used to conduct Cronbach"s Alpha internal consistency reliability test. A minimal value of 0.70 is required to affirm that a measure construct is consistently reliable (Nunnally, 1978; Sekaran and Bougie, 2010). The result of the pilot test as presented in Table 3.1 indicates that the internal reliability values range from 0.89 to 0.94. Thus, the internal reliability values for all constructs are above 0.7 which indicate strong reliability coefficients in the constructs. The data collection procedures commenced after requirements for pilot study were fulfilled.

Table 3.1 Reliability of Construct for Pilot Study.

	Item	Mean	Cronbach's Alpha
1	Performance Expectancy	5.58	0.89
2	Effort Expectancy	5.15	0.91
3	Social Influence	4.89	0.90
4	Perceived Financial Cost	4.78	0.92
5	Perceived Risk	5.18	0.94
6	Internet Banking Experience	4.93	0.94
7	Behavioral Intention to adopt Mobile Banking	5.19	0.95

3.4.5 Sampling Technique

The respondents for this study were university students in Malaysia. Referring to Krejcie and Morgan Table on the number of sample required *(*Krejcie and Morgan, 1970), a total of 400 questionnaires were distributed to the students of the two selected institutions of higher learning representing a public and a private university in Malaysia.

Universiti Utara Malaysia and University Tunku Abdul Rahman were selected as both are established institutions of higher learning representing students from public and private university respectively. Besides that the numbers of students of the both universities are comparable with a total number of students at the range of between 25,000-30,000 students.

Sampling methods can be categorised into non probability sampling and probability sampling techniques. (Saunders et al., 2000). Non probability sampling method is adopted based on researcher‟s availability of time and resources, and also the degree of generalizability required by the research (Kumar, Abdul Talib and Ramayah,

2013). A common non probability sampling technique used is the convenience sampling, which is suitable when information about individual respondents are difficult to identify and access. It is also used when the researcher wishes to cover a large number of respondents swiftly and economically. However, this approach suffers from selection bias and generalizability of the findings to the population at large. (Kumar, Abdul Talib and Ramayah, 2013; Sekaran and Bougie, 2010). Purposive sampling technique is another type of non probability sampling that is selected based on characteristics of a population and the objective of the study. Purposive sampling is differ from convenience sampling and is also known as judgmental, selective, or subjective sampling. In the purposive sampling technique, researcher relies on his or her own judgment when choosing members of population to participate in the study which will result in saving of time and money (Black. K, 2010). Researchers often believe that they can obtain a representative sample by using a sound judgment, which will result in saving of time and money. Alternatively, purposive sampling technique may prove to be effective when only limited numbers of people can serve as primary data sources due to the nature of research design and aims and objectives. It is also one of the most cost-effective and time-effective sampling technique available.

The probability sampling technique is a survey-based research where researcher made conclusion from the sample in relation to a population to answer the research questions (Saunders et al., 2000). The major types of probability sampling techniques are simple random systematic random sampling. Sampling units are selected at random in probability sampling, and if done correctly it will ensure the sample is representative of the population (Hair et al., 2003).

Purposive sampling technique was adopted in this study in view of its practical benefits from the perspective of economy and simplicity. It is simple to perform compared to other techniques; resources and time required is also minimal to conduct data collection. This enables collection of larger sample size quickly at lower costs. Besides, the purposive sampling technique is chosen in this study after considering the below factors: -

a) The university students as target population should has prior internet banking expreince.
b) The university students as target population should has no experience in using mobile banking.

3.4.6. Data Collection Procedures and Fieldwork

Data collection procedures involved researcher gathered the necessary data for the research under investigation. There are two approaches of collecting data (primary and secondary data collection) (Sekaran & Bougie, 2010). Primary data collection was adopted in this research. According to Cooper and Schindler (2006), the quantitative research approach is helpful in translating data collected using questionnaire survey. This study has adopted quantitative research and questionnaire survey. Questionnaire was "reformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives" (Sekaran, 2003, p.233). Questionnaire was deemed most appropriate for this study as the researcher had already known in mind what was required (Cavana, Delahaye, & Sekaran, 2001; Sekaran, 2003) and questionnaires rendered reachable to a larger number of respondents. It superseded other methods such as interview, personal or telephone call, which were time consuming and impractical with respect to the size

of the research population (Sekaran, 1992). Quantitative data can be gathered via by using mail survey, online survey, telephone survey and self administered survey (Leedy and Ormrod, 2001). Self administered survey is commonly used due to its low cost and quicker way to perform the survey. Thus, the self administered survey method was adopted in this study by having the researcher presence in the universities to facilitate data collection. Respondents who have prior internet banking experience but do not use mobile banking services were selected for this study.

3.5. Research Instrument and Construction

The primary data for this study was collected by survey method using questionnaires items adapted from previous studies. The questionnaires were pre tested to ensure wordings are simple and easily understand. A panel discussion comprising of two academician and a senior banker to go through and reword the initially constructed questionnaires. Following the panel discussion consensus, the selection and rewording of items were based on three criteria: measurability according to the operationalization definition of each construct, fitness to mobile banking context, and fitness for general respondent perceptions when adopting mobile banking.

Table 3.2: Construct and Corresponding Items (Page 70-71)

Construct	Items	Sources
Performance expectancy	1. Using mobile banking services will save my time. 2. Using mobile banking services will help me to manage my finance better. 3. Using mobile banking service will help me to made payment quicker. 4. Using mobile banking services will help me to save costs.	Yu, Chian Son (2012) Luarn and Lin (2005) Venkatesh and Zhang (2010) Foon and Fah (2011)
Effort expectancy	1. I believe it will be easy to learn using mobile banking services. 2. I believe it will be easy to access into the mobile banking service apps. 3. I believe it will be easy to use mobile banking services. 4. I believe I would not have any doubts when I‟m using mobile banking services.	Yu, Chian Son (2012) Luarn and Lin (2005) Venkatesh and Zhang (2010) Foon and Fah (2011) Sripalawat et al. (2011)
Social Influence	1. People who are important to me think I should use mobile banking services 2. People who are familiar with me think I should use mobile banking services 3. People who influence my behaviour think I should use mobile services 4. Most people around me use mobile banking services	Yu, Chian Son (2012) Venkatesh et al. (2003) Venkatesh and Zhang (2010) Foon and Fah (2011) Sripalawat et al. (2011)
Perceived financial costs	1. I believe the cost of using mobile banking service is lower than other banking channels 2. I believe the cost of mobile data internet service is cheap 3. I believe mobile banking application is offered free of charge by banks 4. I believe using mobile banking service is free.	Yu, Chian Son (2012) Luarn and Lin (2005) Sripalawat et al., (2011)
Perceived risk	1. I believe my personal information is kept confidential when using mobile banking services 2. I believe my banking transactions are secured when using mobile banking services. 3. I believe my privacy would be protected when using mobile banking services. 4. I believe conducting mobile banking service transactions are safe.	Yu, Chian Son (2012) Luarn and Lin (2005) Foon and Fah (2011) Wadie Nasri (2011)

Internet banking experience	1. I have use internet banking service for my banking needs 2. I am using internet banking service for handling my banking transaction. 3. Using internet banking gives me an amazing experience. 4. I will continue using internet banking service for handling my banking transaction.	Mahmud Alkailani (2016)
Behavioural intention to adopt mobile banking	1. I intent to make payment using my mobile phone. 2. I intent to check my account balance using mobile phone. 3. I intent to make money transfer to other bank account using mobile phone. 4. I intent to make online purchase using mobile phone. 5. I intent to manage my bank account using mobile phone. 6. I intent to experiment or regularly use mobile banking service.	Kim et al., (2009)

All above items regarding the measurement of constructs presented in Table 3.2 were adapted from previous studies and carefully reworded to fit the mobile banking adoption intention context in Malaysia to ensure content validity of the questionnaires.

Refer to to the table 3.2., the sources of the measurements of the abovementioned constructs; performance expeactancy, effort expextancy, social influence, perceived financial costs and perceived risks were adapted mainly from Yu, Chian Son (2012). Yu Chian Son (2012) is a study on factors affecting individual intention to adopt mobile banking in Taiwan which it‟s original source of the study‟s measurements was from Luarn and Lin (2005), Venkatesh et al. (2003), Venkatesh and Zhang (2010), Foon and Fah (2011) and Sripalawat et al. (2011). Worth to highlight that the measurement for perceived risks adapted from Yu, Chian Son (2012) and Wadie Nasri (2011) has sufficiently covered both privacy risks and financial risks which are

the two areas of risks often considered by bank customers before adopting mobile banking.

3.5.1. Measurement

Questionnaires consisted of multiple items for each of the six independent variables and the dependent variable. The structured questionnaire items used 7 points Likert scale. A Likert-type scale is used because it is commonly used in social science research (Alreck and Settle, 1995; Miller, 1991). Krosnick and Fabrigar (1997) recommended that a 7 points Likert-type rating scale provide more reliable measurement as it allowed the respondents to express their view in a more precise manner.

The Likert 7-point scale were rated as; 1 „Strongly Disagree", 2 „Disagree", 3 „Somewhat Disagree", 4 „Neither Agree or Disagree", 5 „Somewhat Agree", 6 „Agree", and 7 „Strongly Agree".

3.6 Data Analysis Techniques

The data collected from the questionnaires was input into SPSS spreadsheet. Descriptive analysis was conducted on the constructs to examine the mean, standard deviation, frequency, skewness and kurtosis in order to establish the normality of the data. The characteristics of the raw data enable the researcher to identify possible data entry errors on items with extreme value that need to be rectify. Errors will also be corrected at this stage.

Demographic information such as age, gender, educational background and other basic characteristic of the respondents were examined. Descriptive analysis is also aimed to identify any violation of assumptions like detection of outliers, normality and missing data which could affect the results. Statistical tests like mean, standard deviations, frequency, skewness and kurtosis were conducted to establish the normality of the data. Besides, inferential statistics analysis using PLS was conducted to provide answers to the research questions.

Past research opined that structural equal modeling is useful for theories development and testing (Hair et al., 2012; Ringle et al., 2012; Shook et al., 2004; Steenkamp & Baumgartner, 2000). There are two different type of statistical techniques for assessment of structural equation models namely (1) Covariance-based SEM (CB-SEM) (Diamantopoulos & Siguaw, 2000; Joreskog, 1978 and Rigdon et al., 1998) and (2) Variance-Based Partial Least Squares Path modeling or referred as PLS-SEM (Hair et al., 2013; Lohmoller, 1989; Rigdon, 2012; Wold, 1982). Hair et al., (2012), Ringle et al., (2012), and Lee et al., (2011) argues that PLS-SEM method has been well accepted by both practice and academic studies on this matter, the partial least squares structural equation modeling method (Hair et al., 2014; Reinartz et al., 2009) has established much recognition recently in particular in studies related to marketing (Hair, Sarstedt, Ringle and Mena, 2012), strategic management (Hair, Sarstedt, Pieper and Ringle, 2012), and management information systems (Ringle, Sarstedt, & Sarstedt and Straub, 2012). Besides, the partial least squares structural equation modeling method has also been well accepted by other disciplines such as accounting (Lee et al., 2011), operations management (Peng and Lai, 2012), and also in the field of organizational research (Sosik, Kahai and Piovoso,

2009). PLS-SEM is particular suitable for research where the theoretical model is recent and not well established, the model is quite complicated with latent variables or structural paths and also when the objectives of the research are to forecast associations (Chin and Newsted, 1999).

The present study has adopted PLS SEM in view of the justifications as discussed below. Firstly, PLS-SEM modeling is alike the usual regression technique and it is able to predict the relationship between constructs (structural model) and relationship between indicators and their corresponding latent constructs (the measurement model) concurrently (Duarte and Raposo, 2010; Chin, Marcolin and Newsted, 2003; Gerlach, Kowalski and Wold, 1979).

Secondly, this study intent to examine the moderating role of prior internet banking experience on the relationship between the predictors and behavioral intention to adopt mobile banking; past studies suggests that the moderating effect of prior internet banking experience on behavioral intention to adopt mobile banking was limited and not conclusive. In addition, the study was to examine the association of the determinants of mobile banking adoptions and the behavioral intention to adopt mobile banking with the presence of prior internet banking experience. Thus, the study is exploratory in nature and past study suggested that PLS path modeling or PLS-SEM should be preferred over other approaches (Hair et al., 2011; Henseler, Ringle, & Sinkovics, 2009; Hulland, 1999).

Thirdly, PLS-SEM has high competence in parameter assessment due to its advanced statistical power comparing to CB-SEM (Hair et al., 2014). Its assessment is highly

precise and more likely to reflect a specific relationship significant when there should be a significant in the population. Furthermore, PLS-SEM is more flexible as it does not required assumption on the multivariate normal distribution of data and can be adapted to evaluate data even when the normality assumption is violated. Besides that, the PLS-SEM method could be used with small sample size and complicated models, with many latent variables and a large number of indicators (Chin, 2010). It can handle the reflective and formative measurement models without difficulties (Claudia C.Pitts, 2014).

Fourthly, The PLS SEM was favored comparing to other path modeling software (for example AMOS; Analysis of Moment Structures), in view of its user friendly and graphical user interface features (Temme, Kreis and Hildebrandt, 2006; 2010).

In short, a series of steps were taken in this study to analyze the data. Firstly, the data collected was input and run through SPSS to perform analysis on mean, standard deviation, frequency, skewness and kurtosis in order to establish the normality of the data. Second, the measurement model was established, then followed by calculating the data reliability, internal consistency reliability, convergent validity and discriminant validity using the Smart PLS software (Hair et al., 2011; Henseler et al.,2009). Third, the standard bootstrapping procedure was performed in assessing the structural model (Hair et al., 2011; Hair, Sarstedt, Ringle, and Mena, 2012; Henseler et al., 2009). The significance of the path coefficients, level of the R squared values, effect size and predictive relevance of the model were also examined (Hair, Hult, Ringle and Sarstedt, 2013). Fourth, the present study also performed a supplementary PLS-SEM analysis (i.e moderator analysis) based upon

Henseler and Chin (2010) and Henseler and Fassott (2010) guiding principles to examine the moderating effect of prior internet banking experience in PLS path modeling. The present study performed a two-stage approach for testing the moderating effect of prior internet banking experience on the determinants of mobile banking adoption and behavioral intention to adopt mobile banking. Lastly, the present study also established the strength of the moderating effects using Cohen‟s (1988) effect size formula.

3.7. Chapter Summary

This chapter has explained the research methodology and techniques used by the researcher which covered research design, population and sampling technique, research instrument development, and data gathering procedures and analysis technique. Lastly, the justifications for adopting PLS-SEM were also explained in this chapter.

CHAPTER 4

RESULT ANALYSIS AND FINDINGS

4.1. Introduction

The chapter discusses the results generated from the data analysis. The results to be discussed in this chapter primarily comprise of the profile of the respondents, validity and reliability of questionnaire items and the hypothesis testing results to provide answers to the research questionnaires.

4.2. Response Rate

Out of the 400 questionnaires distributed, a total of 220 was returned and used in this study. The response rate for this study is believed appropriate and valid due to academic questionnaire survey is usually low (Sekaran & Bougie, 2010). Besides that, a response rate of 55 % was considered greatly sufficient for the analysis based on Sekaran's (2003) argument that response rate of 30% was acceptable for surveys

Table 4.1 below summarises the response rate of this study.

Table 4.1 Response Rate

	No of Respondent	%
Number of questionnaire circulated	400	100%
Number of responses received	220	55%
Number of responses used for analysis	220	55%

4.3 Data Screening and Preliminary Analaysis

Data screening is part of an important requirements in the quantitative research process. It is paramouth to conduct data screening to identify any potential violation of the basic assumptions related to the application of multivariate techniques (Won, Wan, & Sharif, 2017; Pallant, 2011). Besides that, the initial data examination enabled the researcher to have a deeper understanding on the data collected. Firstly, it is important to meet the assumptions of psychometric properties concerning the data, therefore making it safe to proceed for statistical analyses. Next, followed by certain procedures for error detection and correcting those errors if any errors was identified in the data file. Failure to do this might resulted in distorting of the following data analysis (Pallant, 2011).

4.3.1 Missing Data Analaysis

The indication of a missing data was when a respondent failed to deliver answer concerning one or more questions thus making the data collected not appropriate for subsequent analysis (Hair, et al, 2010; Howel, 2007). Data coding error or data entry error were also sources of the occurrence of missing data except in a situation where the respondents were asked to skip questions. In this study, following the advice of Howel (2007). After running the data on SPSS for frequency analysis, no missing value was found in this study.

4.3.2 Assessment of Outliers

Another key aspect of data screening was identifying and trearment of outliers. Outliers were were extreme scores or values of data sets that may significant affect on the analysis and the result of the study (Hair et al., 2010; Tabachnick & Fidell, 2014). Presence of outliers in the data set could utterly distort the following data analysis and lead to erroneous results (Verardi & Croux, 2008).

Mahalanobis distance (d2) was employed to detect the outliers. Mahalanobis distance (d2) is defined by Tabachnick and Fidell (2007) as "the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables". A case is a multivariate outlier if the probability associated with its D-square is 0.001 or less. Respodent with Mahalanobis distance value that exceeded the chi-square value should be deleted (Tabachnick & Fidell, 2007). Data in this dissertation shown none of the items with D square score probability (p) of less than 0.001. Hence, 220 respondents were maintained and valid to be used for further analysis in this study.

4.4 Profile of Respondents

Self administratered survey was conducted with the researcher distributed the questionnaires in the two universities. The total number of questionnaires distributed was 400 but only 220 out of total 400 questionnaires distributed were returned. Similar empirical past research conducted by Cheah et al. (2011) to examine determinants of mobile banking adoption intention in Malaysia distributed 400 self-administratered questionnaires and only 220 (55%) usable questionnaires were used in the research.

Table 4.2 summarises the demographic characteristics of respondents in this study which include gender, age, ethnic group, public university or private university type, degree program, year of study; type of bank account the respondents has and also type of mobile phone used.

Table 4.2 Demographic Characterise of The Respondents

Description	Frequency	Percent
Gender		
Male	65	29.5
Female	155	70.5
Ethnic		
Malay	99	45.0
Chinese	103	46.8
Indian	18	8.2
Age		
20 years and below	38	17.3
21-22 years	148	67.3
23 and above- 24 years	34	15.4
Year of undergraduate study		
Year 1	39	17.7
Year 2	65	29.5
Year 3	92	41.8
Year 4	24	10.9
Type of degree program		
Business program	136	61.8
Arts & social science program	46	20.9
Engineering program	38	17.3
University type		
Public (UUM)	136	61.8
Private (UTAR)	84	38.2
Bank account type		
Saving Account	210	95.5
Fixed deposit Account	2	.9
Current Account	8	3.6
Phone type used		
iPhone	71	32.3
Samsung	53	24.1
Huawei	20	9.1
OPPO	46	20.9
Others	30	13.6

As presented in Table 4.2, majority of the respondents in the sample or 155 respondents (70.5%) were females while the remaining 65 respondents, representing 29.5 percent were males. This suggests that there is a gender gap between men and women in institution of higher learnings in Malaysia where enrolment of female students has higher ratio compared to men. This is in line with the recent study by Penang Institute which mentioned that women have had a higher enrolment ratio in local public universities since 2000, of 65.3% - 64.3% (Jonathen Yong Tienxhi, 2017).

Table 4.2 shown that most of the respondents were undergraduate students from public university which made up of 61.8 percent from the total respondents and the remaining 38.2 percent were undergraduate students from private university. In terms of ethnic, Table 4.2 showed that the participants were represented by Malay (45%), Chinese (46.8%) and Indian (8.2%).

Most of the respondents were pursuing undergraduate business degree program which made up of 61.8 percent of the total number of respondents, followed by Arts and Social Science degree program (20.9 %) and engineering degree program (17.3 %). Additionally, Table 4.2 also shown 41.8 percent of the respondents were currently in the third year of their degree program, followed by year 2 (29.5%), year 1 (17.7%) and year 4 (10.9%) of their study program. In term of age group, 67.3 percent of the respondents were in the age group between 21-22 years. This was followed by those in the age group of 20 years and below (17.3%) and those in the age group of 23 years and above (15.4%). Majority of the undergraduate students participated in this study are at the age group of between 21-22 who will be entering

into job market swiftly in the near future. Thus, this study will enable banks and policy maker to understand better the needs and behavioural intention on mobile banking of this age group who will be contributing to the revenue of the banking industry and country‟s economy growth soon in the near future.

Table 4.2 indicated that a majority or 95.5 percent of the respondents have maintained a saving account, only 3.6 percent of the respondents have both saving account and current account, only 0.9 percent have both saving and fixed deposit account. This indicated that most of the undergrdaute students participated in the study has good experience in dealing with banking service which is pre requieiste for this study.

Table 4.2, also shown the brand of mobile phone used by the respondents, interestingly it shown almost a third of the respondent was using iphone (32.3%), followed by Samsung (24.1%), OPPO (20.9%), Huawei (9.1%) and other brands (13.6%). From the statistic collected in this study, it is interesting to find out that majority of the undergraduate students prefer the smartphone brand of iphone and Huawei is the least commonly used among the undergraduate students.

4.5 Descriptive Analysis of the Constructs

Descriptive statistics help to explain the main characters of a data set from the respondents‟ viewpoint on each dimension of the variable (Pallant, 2013). It provides an indication to the researcher on how the respondents in the study have responded to the questionnaires (Sekaran and Bougie, 2010).

Descriptive analysis was performed on the constructs to compute the mean, standard deviation, skewness and kurtosis in order to establish the normality of the data. Data distribution is considered normal if the value of standard deviation, skewness, and kurtosis are low. Statistical analysis technique using PLS-SEM was used in performing the descriptive analysis. The result of descriptive analysis performed on the collected data in this study using PLS-SEM technique is shown in Table 4.3.

To achieve a normal distribution data, the standard deviation value should be within 2, (Altman, D.G. and Bland, J.M., 1995). The results demonstrated that the standard deviation of all the latent constructs ranged from 1.274 to 1.794 which is considered acceptable and implying that high percentage of the cases in the data set were relatively close to the mean value. Thus, it could be further ascertained that opinions of respondents collected in this study are acceptable and at satisfactory level with regard to all latent constructs.

Table 4.3 presented the difference in mean value and standard deviation for the data collected in this study. The result of the PLS-SEM analysis found that all the variables presented with skewness and kurtosis values fall within the range of

between -1.96 and +1.96. The study thus suggested that the data is normally distributed.

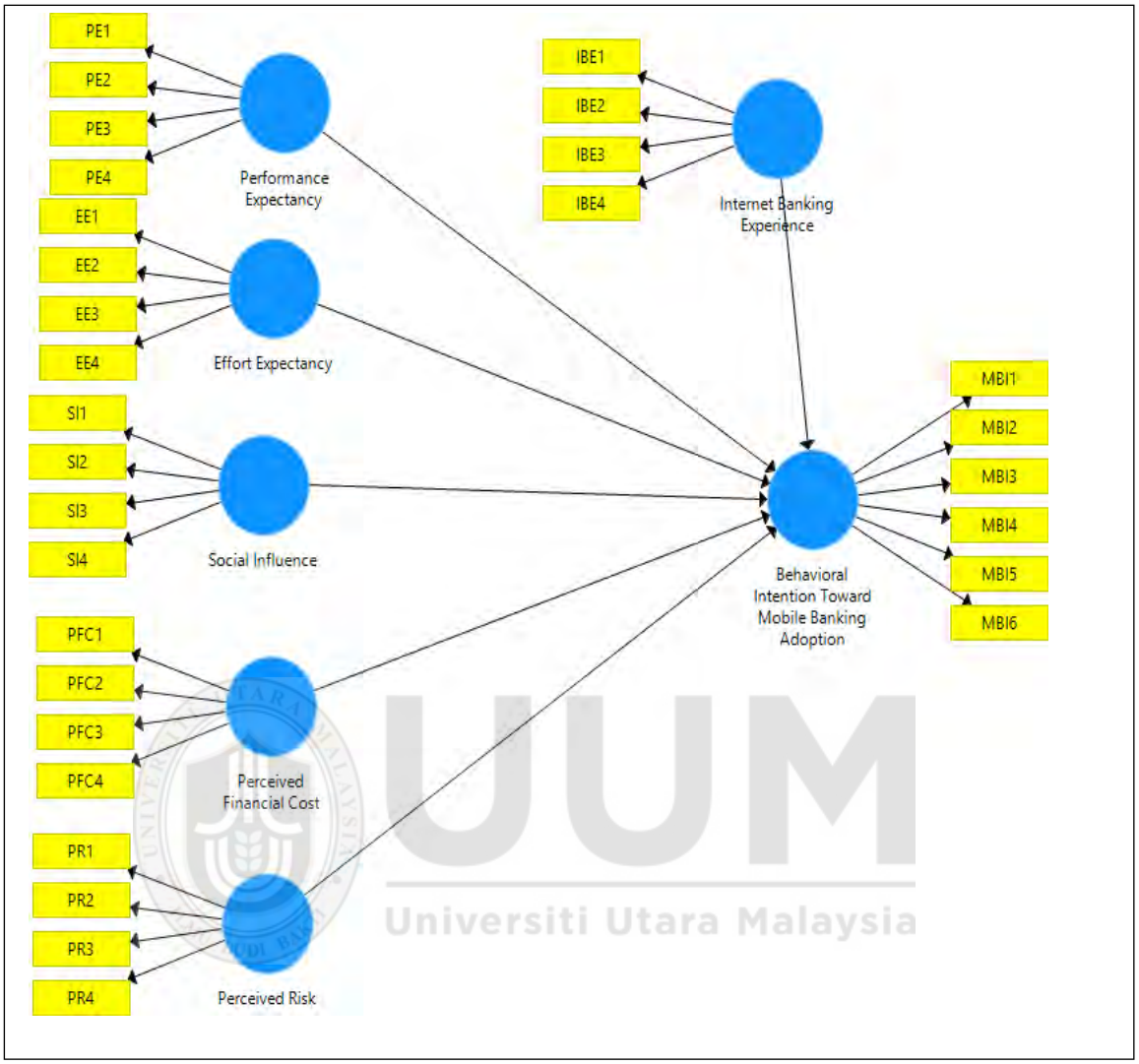
Table 4.3 Descriptive Statistics (using PLS-SEM technique).

Variable	Item	Missing	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
Performance	PE1	0	5.768	6	1	7	1.589	1.947	-1.567
Expectancy	PE2	0	4.464	4	1	7	1.644	-0.593	-0.226
	PE3	0	5.941	6	1	7	1.474	3.039	-1.825
	PE4	0	4.573	5	1	7	1.794	-0.868	-0.317
Effort	EE1	0	5.405	6	1	7	1.429	1.237	-1.096
Expectancy	EE2	0	5.123	5	1	7	1.371	0.979	-0.873
	EE3	0	5.4	6	1	7	1.469	1.286	-1.192
	EE4	0	4.509	4	1	7	1.524	-0.344	-0.273
Social	SI1	0	4.664	5	1	7	1.542	-0.41	-0.314
Influence	SI2	0	4.6	5	1	7	1.506	-0.32	-0.366
	SI3	0	4.673	5	1	7	1.529	-0.245	-0.388
	SI4	0	5.055	5	1	7	1.595	-0.022	-0.679
Perceived	PFC1	0	4.673	5	1	7	1.517	-0.316	-0.36
Financial	PFC2	0	4.632	5	1	7	1.274	0.223	-0.424
Costs	PFC3	0	4.682	5	1	7	1.592	-0.318	-0.515
	PFC4	0	4.591	5	1	7	1.678	-0.643	-0.383
Perceived	PR1	0	4.623	5	1	7	1.584	-0.35	-0.455
Risks	PR2	0	4.523	5	1	7	1.463	-0.339	-0.413
	PR3	0	4.582	5	1	7	1.6	-0.471	-0.441
	PR4	0	4.459	4	1	7	1.544	-0.457	-0.292
Internet	IBE1	0	4.973	5	1	7	1.584	-0.154	-0.667
Banking	IBE2	0	4.995	5	1	7	1.527	-0.321	-0.555
Experience	IBE3	0	4.873	5	1	7	1.412	-0.186	-0.348
	IBE4	0	5.064	5	1	7	1.56	-0.192	-0.599
Mobile	MBI1	0	4.873	5	1	7	1.585	-0.379	-0.541
Banking	MBI2	0	5.15	5	1	7	1.601	0.076	-0.829
Intention	MBI3	0	4.845	5	1	7	1.677	-0.527	-0.569
	MBI4	0	5.059	5	1	7	1.502	-0.419	-0.515
	MBI5	0	4.932	5	1	7	1.523	-0.479	-0.491
	MBI6	0	4.9	5	1	7	1.513	0.057	-0.693

4.6 Assessment on Measurement Model

It is important to analyse and validate the measurement model before proceeding to examine the structural model to ensure the model has an acceptable level of reliability, convergent and discriminant validity. The measurement model examines the relationship between the indicators and the constructs used in the research. In this study, the measurement model was in the form of reflective measure and several tests were performed to validate the measurement model‟s internal consistency, convergent validity, and discriminant validity. Figure 4.1 below illustrate the measurement model.

Figure 4.1 Measurement Model



4.6.1 Internal Consistency

Internal consistency is to assess the reliability of the instrument used for a research. In the PLS-SEM technique, composite reliability is being used to measure the internal consistency instead of using Cronbach Alpha in the SPSS method which is the traditional approach in measuring reliability but past study suggested that it has many limitations and composite reliability is a better option (Shook, C. L., Ketchen, D. J., Hult, G. T. M. and Kacmar, K. M, 2004).

For this research, the composite reliability results were presented in Table 4.4. According to Hair et al., (2006), composite reliability of more than 0.7 is regarded as desirable. The composite reliability for this study has a value of more than 0.8, thus the internal consistency of the items were established.

4.6.2 Convergent Validity

Convergent validity assesses the validity of the questionnaires to examine whether it measured the constructs correctly as it is a test intended to assess a particular construct is actually measuring that construct (Ramayah et al., 2011). In PLS-SEM technique, the factor loading and average variance extracted (AVE) measure the convergent validity. There are various suggestions on cut off value of factor loading (Hair, Anderson, Babin, and Black, 2010) advocate that factor loading for each item should be higher than 0.5 in order to be considered for further analysis. Stevens (1992) suggests using a factor loading cut-off value of 0.4, irrespective of sample

size. On the other hand, Hair et al (1998) recommended that factor loading value of the range of 0.3 to 0.75 is acceptable.

Whereas, AVE of more than 0.5 must be achieved in order to establish that the indicator explained at least 50% of the variables‟ variances (Fornell and Larcker, 1981). The convergent validity results for this study are presented in Table 4.4. The results showed that the factor loading and AVE for all variables used in this study were above the threshold required. Thus, this suggested that convergent validity was established.

4.6.3 Discriminant Validity

Discriminant validity is used to differentiate one variable from the others (Sekaran and Bougie, 2010). It is a measurement to study that variables that are not supposed to be related are in fact not related (Martyn Shuttleworth, 2009). Thus, the fundamental distinction between convergent validity and discriminant validity is that convergent validity investigate whether the variables that should be related, are indeed related. Discriminant validity investigates whether believed not related variables are, in fact, not related (Martyn Shuttleworth, 2009).

To test discriminant validity of the variables, Fornell and Larcker analysis and cross loading are being used. Based on Fornell and Larcker analysis method, the squared root AVE value of a variable has to be greater than the correlation between the variables. On the other hand, for the cross loading analysis, the indicators assigned to a variable should be higher than its loading with other variables. Table 4.5 and Table 4.6 present the results of for Fornell and Larcker analysis and cross loading analysis

result suggested that the discriminant validity for this study was adequately established because the squared root of the variable AVE were more than the correlation between the variables. Besides, cross loading analysis results indicated that the loading within the variables were higher compared to the loading between the variables. This has further supported the discriminant validity of the variables.

Table 4.4 Composite Reliability and Convergent Validity

	Items	Loading	Composite reliability	AVE	Convergent validity
Effort Expectancy	EE1	0.866			
	EE2	0.823			
	EE3	0.910			
	EE4	0.711	0.899	0.691	Yes
Internet Banking Experience	IBE1	0.887			
	IBE2	0.932			
	IBE3	0.845			
	IBE4	0.925	0.943	0.806	Yes
Behavioral Intention Toward Mobile Banking Adoption	MBI1	0.817			
	MBI2	0.820			
	MBI3	0.853			
	MBI4	0.873			
	MBI5	0.889			
	MBI6	0.855	0.941	0.725	Yes
Performance Expectancy	PE1	0.891			
	PE2	0.633			
	PE3	0.865			
	PE4	0.684	0.856	0.603	Yes
Perceived Financial Cost	PFC1	0.802			
	PFC2	0.762			
	PFC3	0.855			
	PFC4	0.828	0.886	0.66	Yes
Perceived Risk	PR1	0.853			
	PR2	0.933			
	PR3	0.925			
	PR4	0.910	0.948	0.821	Yes
Social Influence	SI1	0.868			
	SI2	0.919			
	SI3	0.886			
	SI4	0.634	0.900	0.696	Yes

Table 4.5 Results from Fornell and Larcker Analysis

Variable	Behavioral Intention Toward Mobile Banking Adoption	Effort Expectancy	Internet Banking Experience	Perceived Financial Cost	Perceived Risk	Performance Expectancy	Social Influence
Behavioral Intention Toward Mobile Banking Adoption	**0.852**						
Effort Expectancy	0.622	**0.831**					
Internet Banking Experience	0.715	0.608	**0.898**				
Perceived Financial Cost	0.563	0.488	0.495	**0.812**			
Perceived Risk	0.534	0.405	0.421	0.458	**0.906**		
Performance Expectancy	0.629	0.626	0.514	0.549	0.492	**0.776**	
Social Influence	0.518	0.447	0.539	0.427	0.396	0.555	**0.834**

Note: The diagonal represents the square root AVE and inner values are the correlation between variables.

Table 4.6 Cross Loading

Variable	Behavioral Intention Toward Mobile Banking Adoption	Effort Expectancy	Internet Banking Experience	Perceived Financial Cost	Perceived Risk	Performance Expectancy	Social Influence
EE1	0.565	**0.866**	0.546	0.388	0.3	0.572	0.415
EE2	0.429	**0.823**	0.47	0.389	0.275	0.459	0.38
EE3	0.592	**0.91**	0.575	0.411	0.325	0.587	0.495
EE4	0.455	**0.711**	0.409	0.447	0.461	0.437	0.401
IBE1	0.641	0.545	**0.887**	0.399	0.396	0.514	0.41
IBE2	0.652	0.528	**0.932**	0.431	0.376	0.465	0.417
IBE3	0.571	0.538	**0.845**	0.443	0.389	0.422	0.366
IBE4	0.695	0.573	**0.925**	0.502	0.355	0.445	0.388
MBI1	**0.817**	0.461	0.56	0.445	0.488	0.467	0.404
MBI2	**0.819**	0.586	0.574	0.473	0.415	0.576	0.41
MBI3	**0.853**	0.471	0.546	0.477	0.525	0.502	0.429
MBI4	**0.873**	0.536	0.629	0.457	0.401	0.545	0.484
MBI5	**0.889**	0.528	0.643	0.523	0.411	0.508	0.449
MBI6	**0.855**	0.585	0.686	0.497	0.493	0.604	0.513
PE1	0.584	0.592	0.482	0.441	0.414	**0.891**	0.503
PE2	0.349	0.359	0.296	0.394	0.294	**0.633**	0.35
PE3	0.584	0.595	0.483	0.378	0.395	**0.865**	0.495
PE4	0.378	0.326	0.283	0.555	0.439	**0.684**	0.343
PFC1	0.396	0.314	0.364	**0.802**	0.379	0.489	0.413
PFC2	0.495	0.434	0.408	**0.762**	0.339	0.413	0.369
PFC3	0.486	0.441	0.43	**0.855**	0.431	0.479	0.354
PFC4	0.436	0.378	0.397	**0.828**	0.335	0.406	0.242
PR1	0.465	0.421	0.373	0.43	**0.853**	0.443	0.363
PR2	0.524	0.392	0.394	0.457	**0.933**	0.459	0.394
PR3	0.443	0.31	0.343	0.355	**0.925**	0.43	0.303
PR4	0.496	0.339	0.409	0.409	**0.91**	0.449	0.345
SI1	0.161	0.152	0.145	0.124	0.144	0.21	**0.868**
SI2	0.453	0.455	0.4	0.392	0.297	0.445	**0.919**
SI3	0.479	0.452	0.36	0.372	0.35	0.482	**0.886**
SI4	0.408	0.393	0.356	0.312	0.336	0.471	**0.634**

4.7 Assessment on Structural Model

After assessing the reliability and validity of the measurement model, the structural model needed to be assessed in order to examine relationship between the independent variables and the dependent variable. In PLS SEM technique, structural model assessments are performed by reviewing the collinearity, R2 (Assessment to study how close the data are to the fitted regression line), F2 (Assessment to evaluate the effect size), Q2 (Predictive measure to evaluate the model‟s capacity to predict the future) and its path coefficient.

4.7.1 Assessment of Collinearity

Variance Inflation Factor (VIF) asses the multicollinearity among the variables in the structural model which mean how much correlation between predictors exists in a regression analysis. Multicollinearity increases the variance of the regression coefficients. The common guide to interpret VIF value is VIF=1 represent the variables are not correlated, $1 < VIF < 5$ represent moderately correlated and $VIF \geq 5$ represent highly correlated. Hair et al. (2011) recommended the value for VIF should be always below or equal to 5 to ensure collinearity is not a problem among the variables. Otherwise, it will lead to unbalanced parameter estimates and cause difficulties in measuring the effect of independent variables on dependent variables. VIF value of 1 indicates that there is no collinearity among the variables, (Hair, Ringle and Sarstedt, 2011). The Collinearity test was performed using PLS algorithm and the results were presented in Table 4.7. The results indicated that there was no multicollinearity issue among the variables as the highest VIF value was 2.148.

Table 4.7 Collinearity Assessment

	VIF
Effort Expectancy- Behavioral Intention Toward Mobile Banking Adoption	2.106
Internet Banking Experience-Behavioral Intention Toward Mobile Banking Adoption	1.805
Perceived Financial Cost-Behavioral Intention Toward Mobile Banking Adoption	1.666
Perceived Risk- Behavioral Intention Toward Mobile Banking Adoption	1.468
Performance Expectancy-Behavioral Intention Toward Mobile Banking Adoption	2.148
Social Influence- Behavioral Intention Toward Mobile Banking Adoption	1.604

4.7.2 Assessment of R2

R2 is a statistical assessment on how close the data are to the fitted regression line. R2 signify the variance clarified by all the independent variables as well as the combined result or effect on the dependent variable (Hair et al., 2013). Cohen (1988) suggested a parameter to assess R2 whereby, if the value ≥ 0.26 represents substantial, ≥ 0.13 – 0.25 represents moderate and ≥ 0.02 – 0.12 represents weak model. R2 presume that each single variable explains the variation in the dependent variable whereas; the adjusted R2 explains only the independent variables that actually influence the dependent variable.

Table 4.8 demonstrates the results of R2 for the dependent variable, namely behavioural intention toward mobile banking adoption having a R2 value of 0.655 and adjusted R2 of 0.645 respectively which indicates that that the structural model for this research is predicatively relevant.

Table 4.8 R2 for Dependent Variable

Dependent Variable	R2	Adjusted R2	Interpretation
Behavioral Intention Toward Mobile Banking Adoption	0.655	0.645	substantial

4.7.3 Assessment of F2

F2 assessment evaluates the effect size enabled the researcher to examine the effect of the independent variable on the dependent variable. Effect size measures the potency of the connection between two variables on a numeric scale. This measurement is generated by running the PLS algorithm. Cohen (1988) suggested a parameter of F2 value ≥ 0.35 is considered as large, ≥ 0.15 is considered as medium and ≥ 0.02 is considered as small. The results of F2 for this study were as shown in Table 4.9. The F2 effect size range from small to medium for all independent variables explained the effect of the independent variables on the dependent variable.

4.7.4 Assessment of Predictive Relevance (Q2)

Q2 is the predictive measure used in PLS technique to evaluate the model‟s capacity to predict the future (Henseler et al., 2009). Blindfolding method was performed with PLS to estimate Q2 with an omission distance between 5 to 12 (Akter et al., 2011). Blindfolding method was performed in this study using PLS with the omission distance (D Value) of 8. The omission distance value of 8 was used as an average value in the middle as past literature suggested the omission distance value between 5 and 12 to be selected (Hair et al., 2017). Q2 is statistical measurer of goodness of prediction of the model and is important to estimate the predictive ability of the

model. A Q2 value that is larger than 0 interprets that the independent variables have predictive significance for the dependent variable. (Hair et al., 2017).

Table 4.9 illustrated the summary of predictive significance for this research. The results indicate that all the independent variables have predictive significance on the dependent variable with value larger than 0.

Table 4.9 Determination of Effect Size (F2) and Predictive Relevance (Q2)

Hypothesis	F2	Effect Size	Q2	Predictive Relevance
Effort Expectancy -> Behavioral Intention Toward Mobile Banking Adoption	0.016	Small	0.436	Yes
Internet Banking Experience -> Behavioral Intention Toward Mobile Banking Adoption	0.258	Medium	0.436	Yes
Perceived Financial Cost -> Behavioral Intention Toward Mobile Banking Adoption	0.021	Small	0.436	Yes
Perceived Risk -> Behavioral Intention Toward Mobile Banking Adoption	0.044	Small	0.436	Yes
Performance Expectancy -> Behavioral Intention Toward Mobile Banking Adoption	0.036	Small	0.436	Yes
Social Influence -> Behavioral Intention Toward Mobile Banking Adoption	0.022	Small	0.436	Yes

4.7.5 Assessment of Path Coefficient

Path coefficient assessment is performed to measure the inner model and to test whether the hypothesis created are significant. Evaluations on the direct relationship among the variables are achieved by bootstrapping the data and sampling it with the 220 samples. The critical t-values can be expressed based on the type of test. Directional relationships are hypothesized to address the effect of predictors on the extent of behavioral intention toward mobile banking adoption. Thus, a one-tailed test of significance is performed to investigate the direct effect. The standard decision rules for significance of the path coefficient for one tailed test are $T > 1.645$ and $P < 0.05$ (Hair et al., (2017).

Results shown in Table 4.10 indicated significant path coefficient for the association between internet banking experience (moderator), perceived financial cost, perceived risk and performance expectancy to behavioural intention toward intention to adopt mobile banking.

Figure 4.2 showed the path coefficient for the direct relationship between performance expectancy; effort expectancy; social influence; perceived financial cost, perceived risk and behavioural intention toward mobile banking adoption.

Figure 4.2 Direct relationship between performance expectancy; effort expectancy; social influence; perceived financial cost; perceived risk and behavioural intention toward mobile banking adoption.

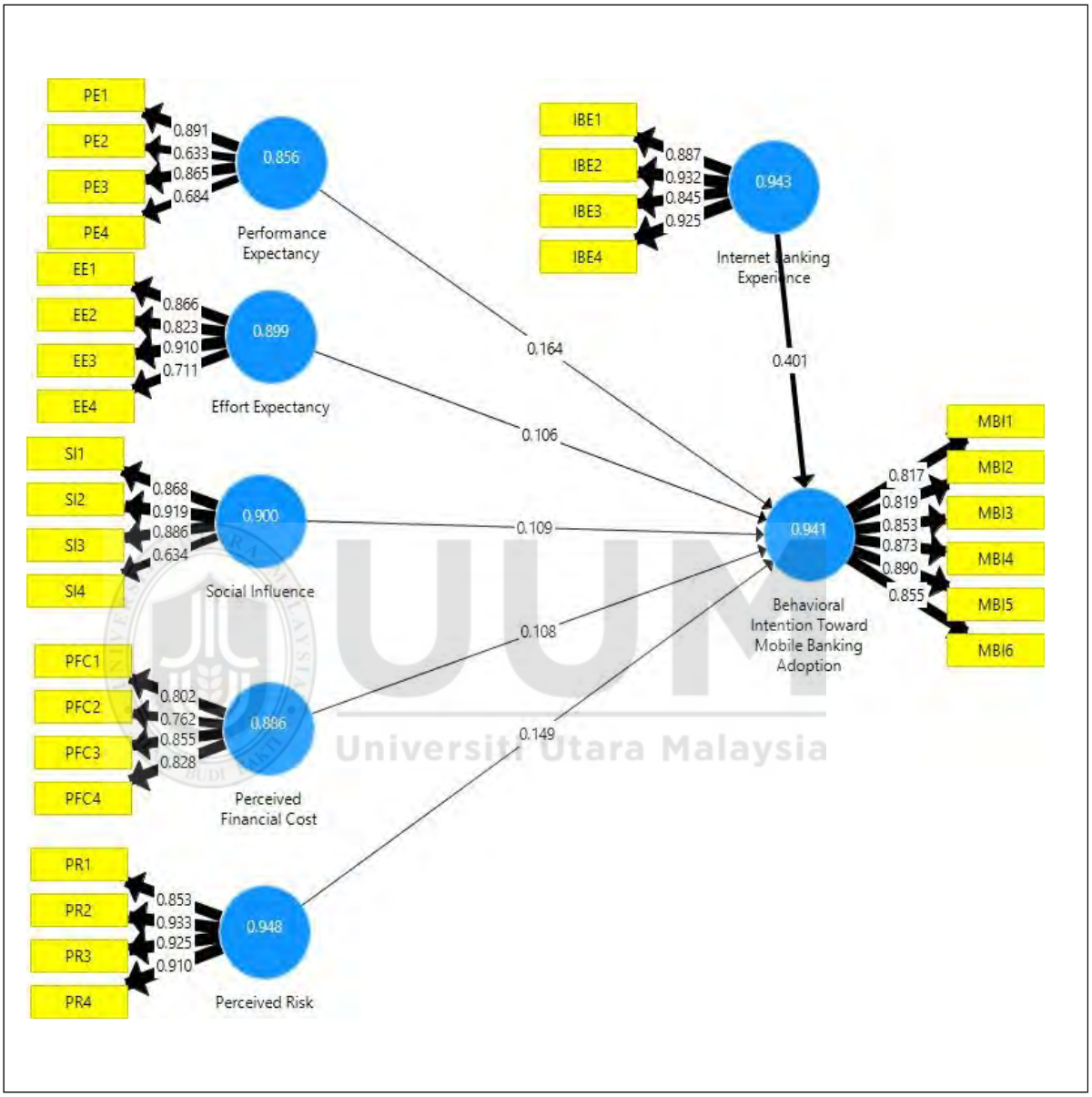


Table 4.10 Overview of Relationship

Hypothesis	Direct Effect (ß)	Sample Mean (M)	Standard Deviation	T Statistics	P Values	Hypothesis Interpretation
Performance Expectancy -> Behavioral Intention Toward Mobile Banking Adoption	0.164	0.163	0.068	2.394	0.009	Supported
Effort Expectancy -> Behavioral Intention Toward Mobile Banking Adoption	0.106	0.107	0.068	1.572	0.058	Not Supported
Social Influence -> Behavioral Intention Toward Mobile Banking Adoption	0.109	0.111	0.065	1.675	0.047	Supported
Perceived Financial Cost -> Behavioral Intention Toward Mobile Banking Adoption	0.108	0.112	0.055	1.958	0.025	Supported
Perceived Risk -> Behavioral Intention Toward Mobile Banking Adoption	0.149	0.146	0.067	2.211	0.014	Supported
Internet Banking Experience -> Behavioral Intention Toward Mobile Banking Adoption	0.401	0.404	0.08	5.035	0.000	Supported

4.8 Relationship Effect

The hypothesis developed for this study was examined and the outcomes as follow:

H1: Performance expectancy is associated with intention to adopt mobile banking.

The result on whether performance expectancy is associated with behavioural intention toward mobile banking adoption is as shown in Table 4.10. The P value = 0.009 with T-statistic = 2.394. This indicates performance expectancy has a significant association with intention to adopt mobile banking as it fulfilled the parameter of P < 0.05 and T-statistic > 1.645. Hence, hypothesis H1 is supported.

H2: Effort Expectancy is associated with intention to adopt mobile banking.

The result on whether effort expectancy is associated with behavioural intention toward mobile banking adoption is as shown in Table 4.10. The P value = 0.058 with T-statistic = 1.572. This indicates that effort expectancy has no significant association with intention to adopt mobile banking as it didn‟t fulfilled the parameter of P < 0.05 and T-statistic > 1.645. Thus, hypothesis H2 is not supported.

H3: Social Influence is associated with intention to adopt mobile banking.

The result on whether social influence is associated with behavioural intention toward mobile banking adoption is as shown in Table 4.10. The P value = 0.047 with T-statistic = 1.675. This indicates that social influence has significant association with intention to adopt mobile banking as it fulfilled the parameter of P < 0.05 and T-statistic > 1.645. Thus, hypothesis H3 is supported.

H4: Perceived Financial Costs is associated with Behavioural Intention towards Mobile Banking Adoption.

The result on whether perceived financial costs are associated with behavioural intention toward mobile banking adoption is as shown in Table 4.10. The P value = 0.025 with T-statistic = 1.958. This indicates that perceived financial costs has significant association with intention to adopt mobile banking as it fulfilled the parameter of $P < 0.05$ and T-statistic > 1.645. Thus, hypothesis H4 is supported.

H5: Perceived Risk is associated with Behavioural Intention towards Mobile Banking Adoption.

The result on whether perceived risk is associated with behavioural intention toward mobile banking adoption is as shown in Table 4.10. The P value = 0.014 with T-statistic = 2.211. This indicates that perceived risk has significant association with intention to adopt mobile banking as it fulfilled the parameter of $P < 0.05$ and T-statistic > 1.645. Thus, hypothesis H5 is supported.

4.9 Moderation Effect Analysis

Moderation is an effect caused by the presence of a third variable on the relationship of the independent variables and the dependent variable. The moderator is a variable that influences the direction and / or strength of the association between a predictor and an outcome, (Cohen et al., 2003). In this study, the moderator used is prior internet banking experience.

The product indicator approach using PLS-SEM is adopted to identify and estimate the strength of moderating effect of internet banking experience on the relationship between performance expectancy, effort expectancy, social influence, perceived financial cost, perceived risk and behavioral intention towards mobile banking adoption, (Chin et al., 2003; Helm, Eggert and Garnefeld, 2010; Henseler and Chin, 2010a; Henseler and Fassott, 2010b). Product indicator approach is adopted in this study as the moderating variable is continuous in nature (Rigdon, Schumacker and Wothke, 1998). Henseler and Fassott, (2010a) recommended to adopt the product term approach as the results of the product term approach are usually equal or better compared to those of the group comparison approach,

Based on the standard decision rules for significance of the path coefficient for one tailed test, $T > 1.645$ and $P < 0.05$ suggested by Hair et al., (2017), the outcome of the moderation effect of internet banking experience is as shown in Table 4.11.

H6: Internet banking experience moderates the relationship between performance expectancy and the intention to adopt mobile banking.

The result on whether with the presence of internet banking experience moderatores the relationship between performance expectancy and behavioural intention toward mobile banking adoption is shown in Table 4.11. The P value = 0.09 with T-statistic = 1.34 indicated that performance expectancy has no significant association with intention to adopt mobile banking as it did not fulfilled the parameter of $P < 0.05$ and T-statistic > 1.645. Hence, hypothesis H6 could not be supported.

H7: Internet banking experience moderates the relationship between effort expectancy and the intention to adopt mobile banking.

The results on whether internet banking experience moderates the relationship between effort expectancy and behavioural intention toward mobile banking adoption is shown in Table 4.11. The value of P = 0. 014 with T-statistic = 1.081 indicated that effort expectancy has no significant association with intention to adopt mobile banking as it did not fulfilled the parameter of P < 0.05 and T-statistic > 1.645. Hence, hypothesis H7 could not be supported.

H8: Internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking.

The results on whether with the presence of internet banking experience moderates the relationship between social influence and behavioural intention toward mobile banking adoption is shown in Table 4.11. The value of P = 0.028 with T-statistic = 1.913 indicated that social influence has a significant association with intention to adopt mobile banking as it fulfilled the parameter of P < 0.05 and T-statistic > 1.645. Hence, hypothesis H8 is supported.

H9: Internet banking experience moderates the relationship between perceived financial cost and the intention to adopt mobile banking.

The results whether with the presence of internet banking experience moderates the relationship between perceived financial cost and behavioural intention toward mobile banking adoption is shown in Table 4.11. The P value = 0.41 with T-statistic = 0.228 indicated that perceived financial cost has no significant association with intention to adopt mobile banking. Hence, hypothesis H9 could not be supported.

H10: Internet banking experience moderates the relationship between perceived risk and the intention to adopt mobile banking.

The results whether internet banking experience moderates the relationship between perceived risk and behavioural intention toward mobile banking adoption is shown in Table 4.11. The value of P = 0.275 with T-statistic = 0.598 indicated that perceived risk has no significant association with intention to adopt mobile banking. Hence, hypothesis H10 could not be supported.

Figure 4.3 below showed the structural model for internet banking experience as the moderator.

Figure 4.3 Internet Banking Experience as moderator.

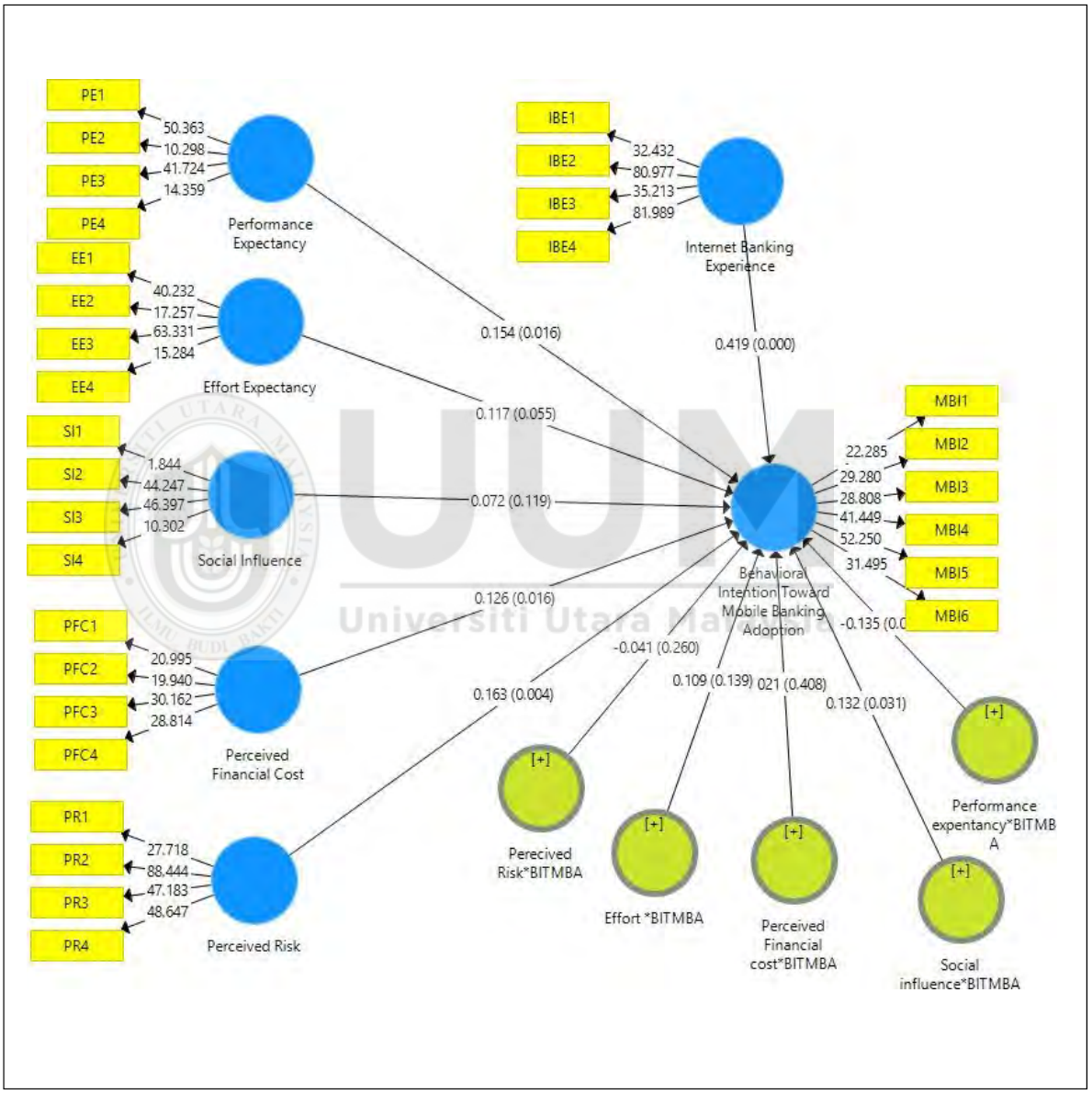


Table 4.11 Relationship Effect with Internet Banking Experience as Moderator

Hypothesis	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values	Hypothesis Interpretation
Performance Expectancy -> Behavioral Intention Toward Mobile Banking Adoption	-0.131	-0.090	0.098	1.34	0.09	No moderating effect.
Effort Expectancy -> Behavioral Intention Toward Mobile Banking Adoption	0.107	0.081	0.099	1.081	0.14	No moderating effect.
Social Influence -> Behavioral Intention Toward Mobile Banking Adoption	0.117	0.089	0.061	1.913	0.028	Moderating effect presence.
Perceived Financial Cost -> Behavioral Intention Toward Mobile Banking Adoption	-0.021	-0.03	0.092	0.228	0.41	No moderating effect.
Perceived Risk -> Behavioral Intention Toward Mobile Banking Adoption	-0.038	-0.035	0.064	0.598	0.275	No moderating effect.

4.9.1 Determining the Strength of the Moderation Effect

To determine the strength of the moderating effects of internet banking experience on the relationship between performance expectancy, effort expectancy, social influence, perceived financial cost, perceived risk and behavioral intention towards mobile banking adoption, the effect sizes was determined based on Cohen‟s (1988) guidelines. The strength of moderating effects could be evaluated by comparing the R-squared value (Coefficient of determination) of the main model with the R-Squared values of the full model by including both exogenous and moderating variables (Wilden, Gudergan, Nielsen and Lings, 2013; Henseler and Fassott, 2010a) which the strength of the moderating effects could be determined by using the underlined formula (Cohen, 1988; Henseler and Fassott, 2010a).

$$\text{Effect size: } (f^2) = \frac{R^2_{\text{model with moderator}} - R^2_{\text{model without moderetor}}}{1 - R^2_{\text{model with moderator}}}$$

Cohen (1988) suggested a parameter to assess F2 value ≥ 0.35 is considered as large, ≥ 0.15 is considered as medium and ≥ 0.02 is considered as small. Chin et al., (2003) opined that a low effect size unnecessarily suggest that the underlying moderating effect is insignificant as according to Chin et al., (2003), “Even a small interaction effect can be meaningful under extreme moderating conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account”.

Thus, based on the above guideline in determining the strength of moderating effects, Table 4.12 has display that the effect size for behavioral intention toward mobile banking adoption for main model was small at 0.022. Table 4.12 also further explained that the effect size for behavioral intention toward mobile banking adoption for full model was 0.029 which suggested that the presence of moderating effect has improved the effect size for behavioral intention toward mobile banking adoption.

Table 4.12 Comparison of F2 and Effect Size of The Hypothesis of Main and Full Model

Hypothesis	F2	Effect Size	
Social Influence -> Behavioral Intention Toward Mobile Banking Adoption (Main model without moderating effect)	0.022	Small	
Social Influence -> Behavioral Intention Toward Mobile Banking Adoption (Full model with moderating effect)	0.029	Small	

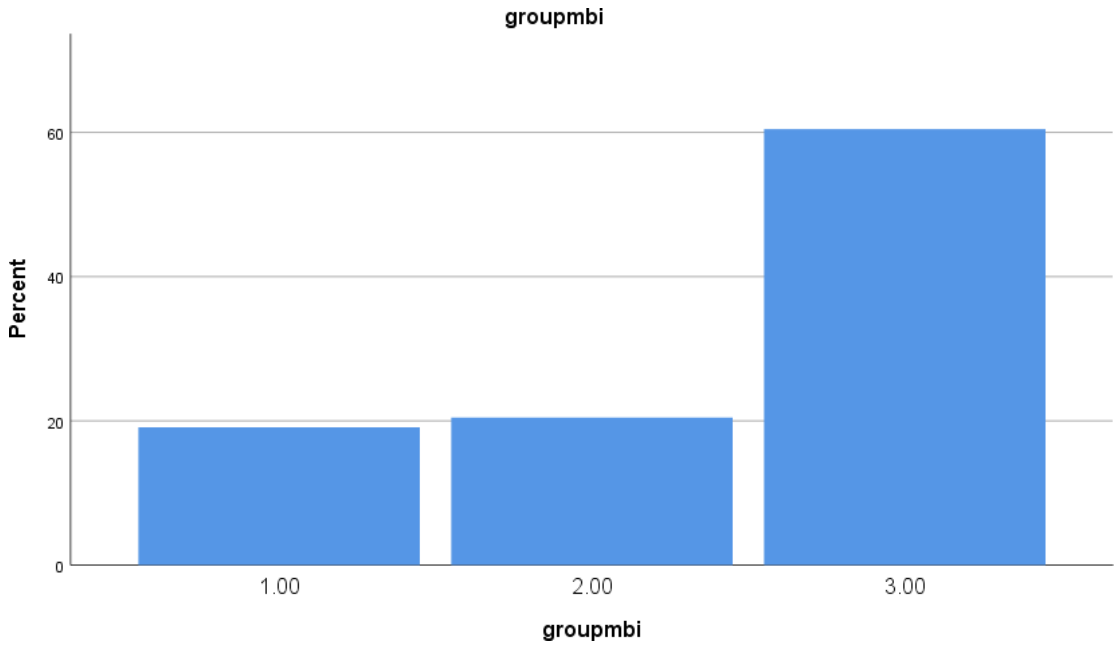
4.10 Determining the Mean Intention to Adopt Mobile Banking Service among the University Students

To determine the mean intention to adopt mobile banking service among university students, SPSS software was adopted to conduct the mean intention analysis using the data collected from the 220 questionnaires with 7-point likert scale which were rated as; 1 „Strongly Disagree", 2 „Disagree", 3 „Somewhat Disagree", 4 „Neither Agree or Disagree", 5 „Somewhat Agree", 6 „Agree", and 7 „Strongly Agree". The responses from the university students were classified into three groups, namely Group 1 (weak intention to adopt mobile banking service) who comprise of those responded 1-3; Group 2 (neutral to intention to adopt mobile banking service) who are those responded 4 and finally Group 3 (strong intention to adopt mobile banking service) who are those responded 5-7.

Table 4.13 Mean Intention to Adopt Mobile Banking Frequency Table

Group	Frequency	Percent	Valid Percent	Cumulative Percent
1	42	19.1	19.1	19.1
2	45	20.5	20.5	39.5
3	133	60.5	60.5	100.0
Total	220	100.0	100.0	

Figure 4.4 Bar Chart Presenting Mean Intention to Adopt Mobile Banking



Both Table 4.13 and Figure 4.4 have suggested that about 60 percent of the respondents has indicates strong intention to adopt mobile banking service. Thus, the above SPSS analysis has concluded that the mean intention toward mobile banking service adoption among the university students is high.

After performing various analyses, the overall results can be summarized as per the hypothesis summary in table 4.14 below.

Table 4.14 Summary of Research Questions, Research Objectives and Hypothesis Testing

Research Objectives and Hypothesis Statements		Results
Research Question : 1) What is university students perception toward mobile banking service adoption intention ? 2) What are the determinants that influence their intention to adopt the mobile banking services? 3) Does prior internet banking experience moderate the relationship between the determinants of mobile banking adoption intention and behavioural intention to adopt mobile banking?		
Research Objective 1 (RO1) : To examine Malaysian university students intention to adopt mobile banking services.		Strong intention toward mobile banking service adoption.
Research Objective 2 (RO2) : To identify factors that influences the intention to adopt mobile banking services.		
H1	Performance expectancy is associated with intention to adopt mobile banking in Malaysia	Supported
H2	Effort expectancy is associated with intention to adopt mobile banking in Malaysia.	Not Supported
H3	Social influence is associated with intention to adopt mobile banking in Malaysia.	Supported
H4	Perceived financial cost is associated with intention to adopt mobile banking in Malaysia.	Supported
H5	Perceived risk is associated with intention to adopt mobile banking in Malaysia	Supported
Research Objective 3 (RO3) : To examine the moderating effect of prior internet banking experience on the intention to adopt mobile banking services among Malaysian university students.		
H6	Internet banking experience moderates the relationship between performance expectancy and the intention to adopt mobile banking in Malaysia.	Not Supported
H7	Internet banking experience moderates the relationship between effort expectancy and the intention to adopt mobile banking in Malaysia.	Not Supported
H8	Internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking in Malaysia.	Supported
H9	Internet banking experience moderates the relationship between perceived financial Costs and the intention to adopt mobile banking in Malaysia.	Not Supported
H10	Internet banking experience moderates the relationship between perceived risk and the intention to adopt mobile banking in Malaysia.	Not Supported

4.11 Chapter Summary

From the above results, it can be concluded that performance expectancy, social influence, perceived financial cost, perceived risk are associated with intention to adopt mobile banking in Malaysia. On the other hand, internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking in Malaysia. The analysis result of the mean intention to adopt mobile banking service conducted by using SPSS software suggests that the intention to adopt mobile service among university students is high. The inferences of the results above are discussed further in chapter 5 together with the summary and conclusion.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter provides a summary of the findings for this study, identifying and addressing potential implications and limitations in this study, followed by suggestions for future research.

This research was conducted to examine factors that influence behaviour intention to adopt mobile banking adoption among the young generation in Malaysia. The research needs to answer the following research questions: What is young generation perception toward mobile banking service and what are the factors that influence their intention to adopt the mobile banking services? In addressing the question, three research objectives were developed. The first objective is to examine Malaysian university students intention to adopt mobile banking services. Second objective is to identify factors that influence their intention to adopt mobile banking services and third objective is to examine the moderating effect of prior internet banking experience on their intention to adopt mobile banking services among Malaysian university students.

From the analysis performed in Chapter Four, the findings suggested that the overall mean intention to adopt mobile banking service is high. The study also found that performance expectancy, social influence, perceived financial cost and perceived risk are associated with respondents‟ behavioural intention to adopt mobile banking services. Besides that, prior internet banking experience also moderates the

relationship between social influence and behavioural intention to adopt mobile banking services. In other words, performance expectancy, social influence, perceived financial cost, perceived risk and prior internet banking experience are predictors of respondents‟ behavioural intention to adopt mobile banking services. These findings show that any changes in these variables will lead to changes in intention to adopt mobile banking services among the respondents.

Contrary to the above, effort expectancy does not have any influence on the intention to adopt mobile banking services. Prior internet banking experience does not moderate the relationship between performance expectancy, effort expectancy, perceived financial cost, perceived risk and intention to adopt mobile banking services.

5.2 Discussion of Findings

This section discusses the study‟s findings in the light of relevant theories and findings of the previous research. The discussion is structured according to the research questions which present the findings based on the hypotheses presented in Chapter 4.

5.2.1. Research Question 1 (RQ1) : What is university students perception toward intention to adopt mobile banking services?

The first resreach question was to find out the young generation perception toward mobile banking service adoption intention which is in line to the Research Objective 1 (RO1) of this study. This study using SPSS analysis has concluded that the mean intention toward mobile banking service adoption among the university students is

high as about 60 percent of the respondents has indicates strong inclination toward intention to adopt mobile banking service. The finding suggested that in general the university students or young generation is well acceptable to new technology innovation. Thus, banks can penetrate into the market shares of this generation on mobile banking service easier by understanding carefully the factors that actually influence their intention to adopt mobile banking. With better understanding on the factors that influence the intention to adopt mobile banking service, banks could implement strategies to improve the penetration rates of mobile banking adoption by addressing the concerns and enhancing the factors that encourage the intention to adopt mobile banking.

5.2.2 Research Question 2 (RQ2) : What are the factors that influence their intention to adopt the mobile banking service among university students?

In addressing the abovementioned Research Question 2 (RQ2) and and in line with Research Objective 2 (RO2), the first five hypotheses (i.e. H1, H2, H3, H4 and H5) are developed. This study hypothesizes that there is a association between performance expectancy and intention to adopt mobile banking (H1); effort expectancy and intention to adopt mobile banking (H2); social influence and intention to adopt mobile banking (H3); perceived financial cost and intention to adopt mobile banking (H4); and perceived risk and intention to adopt mobile banking (H5).

This study has found that performance expectancy or usefulness is associated with intention to adopt mobile banking service and provides further support to the past study (Cheah et al., 2011; Kazi and Mannan, 2013; Yan and Yang, 2015; Thyagarajan, 2015; Eze, Ten and Poong, 2011; Amin et al., 2014; Ja-Chul Gu et al.,

2009; Luarn and Lin, 2005), that found that there is an association between performance expectancy and behavioural intention to adopt mobile banking. This study thus suggested that there is a relationship between performance expectancy and behavioural intention to adopt mobile banking service among university students in Malaysia. This means the young generation is more likely to adopt mobile banking service when they believe adopting the service will help them to perform their job better. As a result, hypothesis H1 is supported.

This study has also found that effort expectancy has no influence on mobile banking adoption intention among young generation in Malaysia. This finding is consistence with finding from past studies (e,g. Baptista & Oliveira, 2015; Faria, 2012; Zhou et al., 2010) that found effort expectancy is not a determinant of intention to adopt mobile banking. However, the findings contradict with findings by Im et al., (2011) and Venkatesh et al., (2012). This also implied that the university students already savvy in using mobile devices as the university students participated as respondent in this study are from the age group of Generation Z as defined by Ranstad Canada (2016). According to Kim, J. and Hahn, K. H. Y., (2012) and Brotheim (2014), these groups are exposed to handset culture and familiar with new technology like mobile phones, social media and mobile technology. They are accustomed to use a wide range of services available in mobile phones. Hence, it seems that effort expectancy as a determinate of mobile banking adoption intention has less importance over time as people has becoming more skilled in using mobile technology. Thus, this study has failed to support hypothesis H2.

On the other hand, this study has found that social influence is associated with intention to adopt mobile banking service and provides further support to the past studies (e.g. Im et al., 2011; Jairak et al., 2009; Ratten, V., 2011; Eze, Ten and Poong, 2011; Phonthanukitithaworn et al., 2015) that found that there is an association between social influence and behavioural intention in mobile banking adoption. As the population of this study is university undergraduate students whose age range fall within the age group of generation Z, the result of this study has reaffirmed the study of Athapol R. and Suphitcha W. (2017) who has performed a study on determinants of the mobile banking adoption intention among generation Y and generation Z, and interestingly found that social influence only influence the generation Y in their mobile banking adoption intention. This study hence suggested that there is a relationship between social influence and behavioural intention to adopt mobile banking service among the young generation in Malaysia. In line with the finding, it suggested that influence from peers play an important role in encourage mobile banking adoption intention. Fan et al. (2005) opined that users are more likely to recommend a service to others and influence them to use a service if they are satisfied with the service experience earlier. Bank could consider strengthening their customer serive delivery, product support hotline and product publicity via social media to encourage the adoption intention of their mobile banking service. The result of this study has supported hypotheis H3.

Perceived financial cost is found to influence the adoption of mobile banking. This findings reaffirmed earlier studies by Thyagarajan, (2015); Eze, Ten and Poong, (2011); Luarn and Lin, (2005); Phonthanukitithaworn et al., (2015), that found perceived financial cost is associated with intention to adopt mobile banking. In this

study, the respondents tend to believe the costs involved in adopting mobile banking is insignificant. Thus, the lower the costs to use mobile banking will drive the adoption intention of mobile banking. The costs included all costs of performing the mobile banking transactions and other fees imposed by banks which are normally relatively low. Thus, it is important that banks always observe their cost and price the mobile banking service at minimal to encourage their mobile banking service adoption intention. As the result, hypothesis H4 is supported.

This study found that perceived risk influence the intention of adopting mobile banking which is consistent with previous studies (Balabanoff, 2014; Cheah et al., 2011; Kazi and Mannan, 2013; Kim-Choy Chung and David K. Holdsworth, 2012). The issues of privacy, security and fraud could impede the uptake of mobile banking (Abu Bakar, Rubiah et al., 2017; Boonsiritomachai, W. & Pitchayadejanant, K., 2017; Dasgupta et al. 2011). The result of this study suggested that perceived risk is a factor influencing mobile banking adoption intention among the young generation in Malaysia. In this study, the respondents tend to believe that the risks is well mitigated which will encourage their intention to adopt mobile banking. In line with the findings, banks should always strengthen their security features from time to time to address various risks concern of their clients to bring confidence and encourage mobile banking adoption intention. Thus, this study has supported hypothesis H5.

5.2.3 Research Question 3 (RQ3) : Does prior internet banking experience moderate the relationship between the determinants of mobile banking adoption intention and behavioural intention to adopt mobile banking?

To further address on the Research Question 3 (RO3) in areas related to the Research Objective 3 (RO3), the next five hypotheses (i.e. H6, H7, H8, H9 and H10) are developed. This study hypothesizes that prior internet banking experience moderates the relationship between performance expectancy and the intention to adopt mobile banking (H6); effort expectancy and intention to adopt mobile banking (H7); social influence and intention to adopt mobile banking (H8); perceived financial cost and intention to adopt mobile banking (H9); and perceived risk and intention to adopt mobile banking (H10).

Prior internet banking experience was examined as a moderator in this study to understand whether internet banking experience has any moderating effect on performance expectancy; effort expectancy; social influence; perceived financial cost and finally perceived risk on respondents‟ intrntion to adopt mobile banking.

The results of this study suggested that prior internet banking experience has no moderating effect on performance expectancy; effort expectancy; perceived financial cost and finally perceived risk on respondents‟ intention to adopt mobile banking.. Hence, this study has failed to support hypothesis H6, H7, H9 and H10.

Despite this study failed to supported the above hypothesis H6, H7, H9 and H10 doesn‟t means internet banking experience has no moderating effect on all factors

that influence mobile banking adoption intention and intention to adopt mobile banking. The results of this study show that internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking. This finding is consistent with research conducted by Suoranta and Mattila (2004) who opined that prior internet banking experience moderates the relationship between social influence and behaviour intention to adopt mobile banking service. This result has provided further evidence that internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking. Thus, hypothesis H8 is supported in this study.

Refer to Table 4.12 presented earlier in Chapter 4 show that the effect size of social influence has increased with the present of internet banking experience as moderating variable. This has strengthened the association between the social influence and intention to adopt mobile banking. On the other hand, the inclusion of internet banking experience as moderating variable into the model reduces the association of performance expectancy and intention to adopt mobile banking; effort expectancy and intention to adopt mobile banking; perceived financial cost and intention to adopt mobile banking; and also perceived risk and intention to adopt mobile banking.

In short, the above findings has addressed the research questions in this study and complements the existing literatures in mobile banking adoption intention by adding to the local literature on factors affecting behavioural intention to adopt mobile banking among the young generation in the Malaysia context.

5.3 Research Implication

This study examines the intention to adopt mobile banking and factors influencing behaviour intention to adopt mobile banking among the younger generation in Malaysia based on an adopted UTAUT framework. The significance and implications of the study in terms of practical and theoretical implications are as below discussed.

5.3.1 Theoretical Implications

(a) This findings from this study has academic contribution as the study has extended the knowledge by incorporating a trust-based construct "perceived risk" and a resource-based construct "perceived financial cost" to the UTAUT framework. A contingency construct "prior internet banking experience" as moderator was incorporated to the UTAUT framework. From the academia knowledge perspective, the study has expanded the literatures of determinants of the intention to adopt mobile banking as past studies were largely focused on determinants of actual adoption rather than intention to adopt mobile banking services. This enabled researchers and service providers to better understand the behaviour of the users. This also contributed to the existing literature on behavioural intention to adopt mobile banking services in Malaysia particularly the knowledge gained from the results of this study had contributed to the body of knowledge in this research area.

Despite UTAUT model has provided evidence to be better than other technology adoption models (Venkatesh et al. 2003; Park et al. 2007; Venkatesh & Zhang 2010) but there is still limited past studies based on UTAUT framework compared to studies based on TAM / TPM. Thus, Venkatesh and Zhang (2010) asserted that more studies examining and improving the generalizability and validity of UTAUT in various technology contexts are required. This study with the feedback from the

respondents in Malaysia based on the UTAUT framework shown that the variances of the younger generation behaviour intention to adopt mobile banking service in Malaysia can be explained by the extended UTAUT framework. Thus, this study has extended the knowledge on the intention to adopt mobile banking among young generation.

(b) By adding one trust-based construct "perceived risk" and one resource-based construct "perceived financial cost" to the UTAUT, this study noticed that performance expectancy, social influence, perceived financial cost and perceived risk were four significant factors in affecting behavioural intention in mobile banking adoption. On the other hand, this study also suggested that effort expectancy did not play a part in affecting individual intention to adopt mobile banking. Hence, this study has subsequently made the theoretical contribution by enriching the existing theory-based mobile banking adoption studies and asserts main factors that affect the behavioural intention to adopt mobile banking. Coupled with the use of prediction-oriented PLS-SEM approach, the study contributes to the development of theory which is supported by empirical data.

It is believed that awareness of similar technology will contribute to favourable attitude towards intention to adopt other new technologies and adoption of the technologies (Dabholkar, 1996). However, as findings from past studies were conflicting and inconclusive. Thus, study on the moderating effect of internet banking experience was conducted in this study as recommended by Baron and Kenny, (1986). The moderator in this study, prior internet banking experience provides support the moderating effect relationship between social influence and intention to adopt mobile banking among the young generation. This is consistent

and further supports the findings by Suoranta and Mattila (2004). Therefore, the second theoretical contribution in this study is providing evident and further highlights the role of prior internet banking experience as contingency factor which are important in technology adoption and ascertain the presence of moderating effect between social influence and behaviour intention to adopt mobile banking. This study has narrowed the theoretical gap in explaining the effects of social influence on intention to adopt mobile banking. In particular, it empirically provide support the moderation effects of prior internet banking experience towards intention to adopt mobile banking that is associated with social influence.

5.3.2. Practical Implications

There is a pressing need for the banking industry in Malaysia, especially among the Malaysian banks to elevate their mobile banking capabilities if they want to sustain their competitive edge and expand market shares of the young generations who will be banks‟ main clients in the near future. To address this, the present study provided a better understanding on the mobile banking adoption intentions among the young generations in Malaysia. UTAUT model is still limited in its literatures as most of the past technology adoption study was conducted mainly using TAM/TPM model. The mian practical contribution from this UTAUT based model study is the findings from the study could help banks in making accurate strategy decision and implement effective and efficient plans in enhancing their mobile banking service penetration rate and capture larger market share in Malaysia especially among the university students who will be the key revenue contributor to the banking industry in the near future. Relevant points raised and practical recommendations suggested in this study would help the banking industry in making sound strategic decision making,

resources allocation in areas enhancing their mobile banking capabilities and increase their market share through making high level management strategy implementation in improving the mobile banking adoption rate by reconsidering the needs of the younger generation.

Findings from this study suggested that performance expectancy, social influence, perceived financial cost, perceived risk are associated with intention to adopt mobile banking in Malaysia whereas effort expectancy is not associated with intention to adopt mobile banking in Malaysia. On the other hand, internet banking experience moderates the relationship between social influence and the intention to adopt mobile banking service.

Past study by Sripalawat et al. (2011) opined that social influence was the most influential determinant in influencing the intention to adopt mobile banking, which aligns with the result of the present study. Besides, prior internet banking experience moderate the relationship between social influence and mobile banking adoption in this present study which suggest that non user with prior similar technology experience will be more ready to explore the possibility in adopting mobile banking service and thus can be influenced by peers or social norm. Thus, banks should take advantage on this by aggressively promoting mobile banking service to the existing internet banking users and try to encourage this particular group of clients to adopt mobile banking service.

Banks in Malaysia can leverage on social media to promote mobile banking services, emphasize interpersonal word-of mouth and using publicity on the emerging social

media (such as Facebook, MSN, Twitter, Instagram and Blog) rather than rely on traditional mass media (i.e., televisions, radios and newspapers) to increase mobile banking adoption.

Other then social influence as per above discussed, performance expectancy, perceived financial cost, perceived risk are associated with intention to adopt mobile banking in Malaysia suggested that there is practical business implications for banks in Malaysia to promote the awareness on how usefulness and beneficial to use mobile banking. It is also inexpensive, safe and secured in using mobile banking services. Resources must be allocated to enhance the security features of the mobile banking services from time to time to build the confidence and trust of the existing users in using mobile banking. With the better understanding on the determinants of mobile banking adoption intention, banks should consider expanding its existing range of mobile banking services available. Additional banking services like SME loan application with fast approval, purchase of mutual funds, life and general insurance, speedier and lower costs fund transfer and payment solution using digital currency technology can be delivered via mobile banking platform as a strategy to embrace the recent rapid Fintech innovation in the financial services industry. Fintech firms still have not completely suppressed the traditional banking business yet as most of the Fintech innovations are still at their early stages and some bank clients still prefer the traditional banking approach due to better trust and confident on the banking platform. (James Walker (2018); Michal Gromek 2018). Thus, banks should swiftly take advantage of their existing goodwill and applying good strategies in embracing the trend of Fintech innovation for their benefit and long term survival. CIMB Bank, the leading local Malaysian bank has quickly response to the trend and

become the first bank in Malaysia to join the Ripple network recently. The blockchain based payment solution by Ripple has enabled the CIMB Bank‟s clients to perform international cross border payment via their mobile banking platform securely at lower cost and faster speed. (Fintech News Malaysia, 2018). Tengku Dato‟ Sri Zafrul Aziz, CEO, CIMB Group mentioned that the collaboration between CIMB and Ripple, the blockchain technology company has enabled them to leverage on each other‟s strengths and capabilities in transforming the way in performing international cross-border remittances. The digital banking innovation will bring swift and cost-efficient solutions to the CIMB banking clients across ASEAN. (Fintech News Malaysia, 2018).

Putting up a promotional banner that carries the title of "Mobile Banking bring you fast, low cost, secured and convenient banking any time anywhere" at bank branches will also help to improve the customers‟ awareness on mobile banking. Promotional materials with information on the usefulness, ease of use, and how secured and credible is mobile banking service being delivered should also be disseminated via social media and branches to raise the bank customers‟ understanding, familiarity and confidence in using mobile banking service.

Dedicated customer service hotline and helpdesk at branches to clarify customers‟ concerns on various issues including topics related to risks and costs involved in adopting mobile banking should also be made available any time to explain and guide customers effectively and efficiently on how to sign up and use the mobile banking service safely. This will deliver better comfort and confidence to customers and thus help to encourage more bank customers to adopt mobile banking service.

5.4 Limitation of Study

This section draws attention on the shortcomings in this research that could have affected the interpretation and analysis of the data which has restricted the researcher to come up with a more comprehensive conclusion.

Due to restriction of time and resources, the cross sectional approach was adopt in this study which the feedback of the respondents only reflect their view and perception at that particular point of time only. Thus, the cross sectional approach restricts the research to understand the perception of the respondents over a longer period of time in understanding how the factors that influence behavioural intention to adopt mobile banking service following a sequence of events. Researcher will also not able to follow up on the respondents to understand whether their intention actually translated into actual usage of the mobile banking services. Perceptions of respondents may vary over a period of time when they have gained more experience (Mathieson et al., 2001; Venkatesh & Davis, 1996). To overcome the abovementioned limitation, a longitudinal study that could provide a better in depth understanding of the research should be adopted.

The study was conducted in quantitative approached which provides us with good knowledge on how many people believe something to be true and descriptive statistics of the study. However, its limitations lie in the absence of individual experience as quantitative research focuses on quantifying a given phenomenon, not “why” or “how” it has occurred; it doesn‟t take into consideration of human experience related to the phenomenon.

5.5 Suggestions for future study

This section provides suggestion for future research and also as a step forward in overcoming the limitations and also complementary to the current study. To overcome the problems and limitations of the cross sectional survey approach used in this study, the longitudinal study approach can be adopted. The longitudinal study method will enabled the researcher to gain a better understanding on the respondents‟ behavioural intention and examine the respondents‟ intention to adopt mobile banking service and converted into actual usage of mobile banking service by conducting follow-up survey with these respondents over a period of time.

The scope of the current survey is confined to a single private and public university in Malaysia only (i.e UTAR and UUM). Future studies can extend the scope of survey by getting respondents from all institutions of higher learning in Malaysia. With a larger scope of survey population, this will provide better representation for the population of the study and the survey findings could be generalized.

The adapted UTAUT adopted in this study on individual users can have very different findings when compared with the corporate users as corporate users may have different perception on mobile banking service. Further research can be conducted by applying the same research model on corporate users to study the behavioural intention of the corporate users on mobile banking adoption. This is especially useful to understand the behaviour of the corporate users in this context as many of the key finance decision makers of corporate are always mobile due to the needs and commitment of their job function.

In addition to the above, limited studies have used qualitative research approach in studying the determinants of behavioural intention for mobile banking adoption. Thus, qualitative techniques such as case study ought to be considered for future researches.

5.6 Conclusion

Due to the rapid advancement of banking technology applications such as Fintech, the usage of mobile phones and access to internet across the world has gained traction among the young generation who prefer to use mobile phones for their banking needs. The benefits of speed, convenience, round-the-clock availability and real-time updating of transactions have driven the adoption of mobile banking. Banks have promoted mobile banking to provide more efficient services. Mobile technology also helps to lower operating costs and gain customer market share. Although more Malaysian banking customers have adopted mobile banking services, there is still room to further improve the adoption rate. Thus, it is important to have a better understanding on the determinants that affecting the behavioural intention toward mobile banking services adoption in Malaysia specifically among the young generation.

Notwithstanding the limitations highlighted in this study, it is believed that the practical and theoretical contributions to both the banking industry and academic arena will be highly valuable and the research approach can be adopted in future study of other mobile banking or mobile commence services under different range of situation and environment.

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APPENDIX I

Section A

A Survey of Mobile Banking Adoption Intention Among University Students in Malaysia

Thanking you for your willingness to answer this Questionnaire. This is part of a study undertaken for Doctorate In Business Administration, University Utara Malaysia. All answer provided will be kept confidential and used for academic purposes. For further information, kindly contact Chiam Tzeh Yew : 012-3318501 (chiamtzehyew@gmail.com). Thank you for your time and kind cooperation.

	Section A. DEMOGRAPHICS DATA
1.	Gender 1. Male ☐ Female ☐
2.	Ethnic ☐ Malay ☐ Chinese ☐ Indian ☐ Others, please state_____
3.	What is your Age ☐ Below 20 years old ☐ 23-24 years old ☐ 21-22 years old ☐ 24 years old and above

4.	What is your current year of study? ☐ Year 1 ☐ Year 2 ☐ Year 3 ☐ Year 4 ☐ Others, please state_____
5.	Program of Study? Please state_____
6.	Type of university attended? ☐ Public university ☐ Private university
7.	What type of bank account do you have? ☐ Saving account ☐ Fixed deposit account ☐ Current account
8.	Do you have any experience in using internet banking service? ☐ Yes ☐ No
9.	Do you own a mobile phone? ☐ Yes. ☐ No

10.	What type of mobile phone are you using? ☐ iPhone ☐ Samsung Galaxy ☐ HTC Desire ☐ Others, please state_____
11.	Have you conducted any banking transaction(s) using your mobile phone? ☐ Yes ☐ No.
12	If Yes. How frequent do you used mobile phone to conduct banking transactions? ☐ Daily ☐ Weekly ☐ Fortnightly

Section B

Please rate the following questions base on the following scales by ticking (√) the appropriate box for each Question.

Disagree Very Strongly	Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly	Agree Very Strongly
1	2	3	4	5	6	7

Performance Expectancy

No	Item	1	2	3	4	5	6	7
PE1	Using mobile banking services will save my time.							
PE2	Using mobile banking services will help me to manage my finance better.							
PE3	Using mobile banking service will help me to made payment quicker.							
PE4	Using mobile banking services will help me to save costs.							

Effort Expectancy

No	Item	1	2	3	4	5	6	7
EE1	I believe it will be easy to learn using mobile banking services.							
EE2	I believe it will be easy to access into the mobile banking service apps.							
EE3	I believe it will be easy to use mobile banking services.							
EE4	I believe I would not have any doubts when I'm using mobile banking services.							

Social Influence

No	Item	1	2	3	4	5	6	7
SI1	People who are important to me think I should use mobile banking services							
SI2	People who are familiar with me think I should use mobile banking services							
SI3	People who influence my behaviour think I should use mobile services							
SI4	Most people around me use mobile banking services							

Perceived Financial Costs

No	Item	1	2	3	4	5	6	7
PFC1	I believe the cost of using mobile banking service is lower than other banking channels							
PFC2	I believe the cost of mobile data internet service is cheap							
PFC3	I believe mobile banking application is offered free of charge by banks							
PFC4	I believe using mobile banking service is free.							

Perceived Risk

No	Item	1	2	3	4	5	6	7
PR1	I believe my personal information is kept confidential when using mobile banking services							
PR2	I believe my banking transactions are secured when using mobile banking services.							
PR3	I believe my privacy would be protected when using mobile banking services.							
PR4	I believe conducting mobile banking service transactions are safe.							

Internet Banking Experience

No	Item	1	2	3	4	5	6	7
IBE1	I have use internet banking service for my banking needs							
IBE2	I am using internet banking service for handling my banking transaction.							
IBE3	Using internet banking gives me an amazing experience.							
IBE4	I will continue using internet banking service for handling my banking transaction.							

Behavioural Intention to adopt Mobile Banking

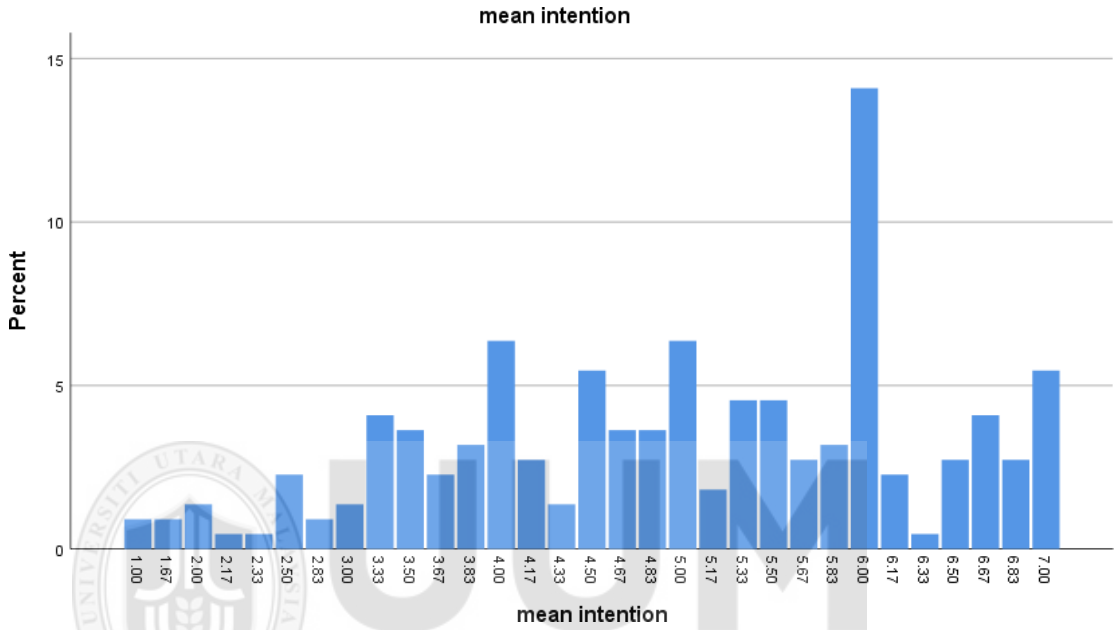
No	Item	1	2	3	4	5	6	7
MBI1	I intent to make payment using my mobile phone.							
MBI2	I intent to check my account balance using mobile phone.							
MBI3	I intent to make money transfer to other bank account using mobile phone.							
MBI4	I intent to make online purchase using mobile phone.							
MBI5	I intent to manage my bank account using mobile phone.							
MBI6	I intent to experiment or regularly use mobile banking service.							

Please state if you have any comment on mobile banking service?

Thank You.

APPENDIX II

Bar chart relfecting the rating of the respondents on the 7 point Likert Scale.



APPENDIX III

Pie Chart explain the mean intention to adopt mobile banking service by classifying the respondents under Group 1 (weak intention to adopt mobile banking service), Group 2 (neutral to intention to adopt mobile banking service) and Group 3 (strong intention to adopt mobile banking service)