BARRIERS OF MOBILE COMMERCE ADOPTION AMONG GENERATION X IN MALAYSIA

CHAN MUN YEE
ELAINE CHONG KET YIN
KWA SIN YEE
LEE KOK WEI
YEONG WENG FATT

BACHELOR OF COMMERCE (HONS) ACCOUNTING

UNIVERSITI TUNKU ABDUL RAHMAN

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BY

CHAN MUN YEE
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A research project submitted in partial fulfilment of requirement for the degree of

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is 9711 words.

Name of Student:	Student ID:	Signature:
1. Chan Mun Yee	12ABB00835	
2. Elaine Chong Ket Yin	13ABB00558	
3. Kwa Sin Yee	12ABB00575	
4. Lee Kok Wei	12ABB01073	
5. Yeong Weng Fatt	12ABB00849	

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DEDICATION

This research project is dedicated to our lovely and beloved supervisor, Dr. Krishna Moorthy Manicka Nadar, friends, and families for their sincere and boundless support, assistance and motivation throughout the completion of this project.

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LIST OF ABBREVIATIONS

CFA	Confirmatory Factor Analysis
DV	Dependent Variable
IB	Image Barrier
IRT	Innovation Resistance Theory
IV	Independent Variable
MC	Mobile Commerce
MLR	Multiple Linear Regression
PCB	Perceived Cost Barrier
PLS	Partial Least Square
PLSR	Partial Least Squares Regression
PPS	Probability Proportionate to Size
RB	Risk Barrier
SEM	Structural Equation Modeling
SME	Small and Medium Enterprise
TB	Tradition Barrier
UB	Usage Barrier
VB	Value Barrier

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PREFACE

Nowadays, mobile commerce is rapidly used by the consumer to perform their daily activities. It is defined as performance of transactions using the mobile devices. Nevertheless, the adoption rate of mobile commerce is low in Malaysia even though mobile commerce has brought many advantages to the consumers. Therefore, there is a need to explore the reasons why consumers are refused to adopt mobile commerce. In addition, this study is intended to focus on the generation X consumers due to their characteristics of shunning to innovation and high purchasing power.

ABSTRACT

Nowadays, mobile commerce is situated in a growing trend due to the explosive growth in the usage and market penetration of mobile devices. Realizing the potentials of mobile commerce, many telecommunication companies have been attracted to invest significantly in the development of mobile commerce. However, the mobile commerce adoption rate is remaining low in Malaysia. On the other hand, generation X is characterized with high earning power, shunning to technological advancements, and is one of the popular targeted segments due to their pre-dominant population in Malaysia. Therefore, this study is intended to explore the resistance factors to understand the reasons for this slow adoption among generation X in Malaysia. Innovation Resistance Theory (IRT) and Valence Framework have been employed to examine the barriers including usage, value, risk, image, and perceived cost barriers. The results of this study are derived from data that collected from 200 generation X consumers in Selangor (KL) and Negeri Sembilan through questionnaires surveys. Target respondents are selected using convenience sampling technique. Multiple linear regressions are used to test the proposed hypotheses of this study. The findings of this study enable local businesses to determine individual resistance behavior and assists local business to develop solutions to eliminate the resistance barriers and act as a means of understanding how to possibly enhance the rate of mobile commerce adoption.

CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter introduces our study which includes the research background, problem statements, research questions and objectives and the importance of the study.

1.1 Background of the Study

Nowadays, mobile commerce (MC) has become more popular due to the explosive growth in the usage and market penetration of mobile devices (Khilfa, Cheng, & Shen, 2011). MC refers to a phenomenal growth of innovative mobile applications that resulted from the development and deployment in wireless networks and mobile telecommunication systems (Wang & Lei, 2007). In short, MC is the performance of transactions using mobile devices (Pourali, Malakooti, & Yektaie, 2014). According to Tiwari, Buse, and Herstatt (2008), MC includes mobile ticketing, mobile banking, mobile marketing, mobile information services, mobile shopping, mobile entertainment and many more.

In essence, MC offers chances to reach customers at various targeted locations configure new services and offerings, and support new types of shopping and service consumption experiences (Dholakia & Dholakia, 2004). Furthermore, consumers are benefited from new features in their mobile devices which are time-saving, convenience and a better user experience (Murphy, 2013). From the business perspective, MC could be fully utilized to maximize profits and reduce cost (Komunte, 2015). In Malaysia, 86.3% of the citizens are mobile phone users (Malaysian Communications and Multimedia Commission, 2013). Thus, MC has garnered considerable attention with consumer oriented applications or products and

is being utilized with the integration of internet-based technologies to formulate business tactics to support business processes.

Generation X refers to people who were born between 1960 and 1980 (Seipert & Baghurst, 2014). They are non-materialistic, have high earning power, shun brand name and technological advancements (Reisenwitz & Iyer, 2009). They constitute 23.9% of the total population in Malaysia (Department of Statistics Malaysia, 2013). Hence, generation X is one of the popular targeted segments due to their predominant population and purchasing power (Khor & Mapunda, 2014). Hence, it is important to apprehend the intention of generation X in MC adoption.

1.2 Problem Statement

The number of Internet users is overtaken by the number of mobile phone subscribers. MC has attracted considerable traffic and many telecommunication companies after realizing the potentials of MC, have invested considerably in developing MC (Xie, Zhang, & Zeng, 2009). Consequently, business environments have been motivated by this innovation to establish efficient and effective ways of operating businesses. Nevertheless, Digital Malaysia (2012) had reported that the total spent on MC (RM467 million) is only a quarter of electronic commerce (RM 17.8 billion). Meanwhile, the percentage of individuals using mobile phone and computer are 94.2% and 56% respectively (Department of Statistics Malaysia, 2013). This shows that the mobile phone has a higher penetration rate but lower amount spent in MC than in electronic commerce. Thus, the above comparison indicates that it is necessary to further explore the causal factors in the resistance of MC adoption in Malaysia since Malaysia has a high mobile phone penetration rate of 146.2% (Malaysian Communications and Multimedia Commission, 2015). Hence, it is imperative for telecommunication companies to understand the reasons for low adoption of MC.

Numerous studies including Peng, Xu, and Liu (2011), Mahatanankoon and Vila-Ruiz (2007), Rahman (2013), had addressed similar problems as mentioned above whereby there is low adoption rate of MC. All these studies were intended to find out the adoption barriers of MC in respective countries to act as a reference for the telecommunication companies to develop solution for this problem. Peng, Xu and Liu (2011) determined the barriers and drivers in the acceptance of MC in China; Mahatanankoon and Vila-Ruiz (2007) investigated the possible barriers that obstruct the adoption of MC applications; and Rahman (2013) examined the resistance factors of MC adoption in developing nations, and methods to overcome these barriers.

However, the study done by Peng, Xu and Liu (2011) is aim to investigate only two adoption barriers of MC in China while this study intended to examine six barriers. Meanwhile, the research by Rahman (2013) was targeted on the stakeholders of MC whereas the target respondents of this study are generation X consumers whereby the telecommunication companies would prefer to know the resistance barriers from the consumers' perspective. Mahatanankoon and Vila-Ruiz (2007) had conducted the research to determine the adoption barriers of MC in US. The findings may not applicable in Malaysian context since it was done in another country. Hence, the research framework has to be adapted in order to be used in Malaysia.

1.3 Research Questions and Objectives

Table 1.1: General Research Question and Objective

General Research Question	General Research Objective
What are the barriers of mobile commerce adoption among generation X in Malaysia?	To identify the barriers of mobile commerce adoption among generation X in Malaysia.

Source: Developed for the research

Table 1.2: Specific Research Questions and Objectives

Specific Research Questions	**Specific Research Objectives**
What is the relationship between usage barrier and mobile commerce adoption among generation X in Malaysia?	To determine the relationship between usage barrier and mobile commerce adoption among generation X in Malaysia.
What is the relationship between value barrier and mobile commerce adoption among generation X in Malaysia?	To analyze the relationship between value barrier and mobile commerce adoption among generation X in Malaysia.
What is the relationship between risk barrier and mobile commerce adoption among generation X in Malaysia?	To explore the relationship between risk barrier and mobile commerce adoption among generation X in Malaysia.
What is the relationship between tradition barrier and mobile commerce adoption among generation X in Malaysia?	To examine the relationship between tradition barrier and mobile commerce adoption among generation X in Malaysia.
What is the relationship between image barrier and mobile commerce adoption among generation X in Malaysia?	To describe the relationship between image barrier and mobile commerce adoption among generation X in Malaysia.
What is the relationship between perceived cost barrier and mobile commerce adoption among generation X in Malaysia?	To evaluate the relationship between perceived cost barrier and mobile commerce adoption among generation X in Malaysia.

Source: Developed for the research

1.4 Significant of the Study

Although many past studies had attempted to investigate the use of MC, there is a need to understand the reasons why customers resist the innovation rather than why they adopt it since customers' resistance is a significant source of market failure for innovations (Cheng, Lee & Lee, 2014). Therefore, the barriers of MC adoption are vital information for the local businesses which intend or currently adopt MC so as to increase the MC adoption rate. The outcomes of this research help local businesses to have a better insight on the relationship between all barriers and the consumers' adoption intention of mobile commerce in Malaysia. Consequently, this study contributes to the deeper understanding of consumer resistance behavior and helps local business to develop solutions to eliminate the resistance and possibly enhance the adoption rate.

As mobile commerce is becoming indispensable in Malaysia, resistance factors in MC adoption are the critical information to increase the MC adoption rate. In the meantime, generation X is the group of acquired purchasing power and considered as a major market segment for MC industry. Thus, the technological resistance studies emphasizing on both MC and generation X are essential. This study also intends to further investigate the major barriers of MC adoption by adapting all five elements of IRT and an additional factor, PCB which has been frequently reported as a significant barrier to innovation adoption (Yu, 2012). While there are various studies discussing MC literature, few have integrated the IRT model. As such, future researchers who are interested in studying similar issue could used the findings of this study as reference.

1.5 Outline of the Study

Chapter one explains the overview of this research which consists of the background, purpose, and significance of the study. In chapter two, conceptual framework and hypotheses are proposed based on the past studies related to the adoption barriers of MC. Chapter three presents the methodology used in this study which includes research design, target population and sampling procedures, data collection method, and variables and measurement. Chapter 4 describes the findings resulted from the data that collected from the survey questionnaires. Lastly, Chapter 5 provides the key findings, implications, limitations and recommendations in this research.

1.6 Conclusion

This chapter explained the background of mobile commerce, problem statement and the significance of this study. This research is tend to provide a better understanding on the adoption barriers of mobile commerce to the telecommunication companies. The review of empirical past studies will be explained in the Chapter 2.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter describes the conceptual model and past empirical studies used in this research. Besides, conceptual framework and hypotheses are developed for this research.

2.1 Theoretical / Conceptual Foundations

The model applied in our research is Innovation Resistance Theory (IRT) which is developed by Ram and Sheth in year 1989. Innovation resistance is generally a reaction result from a sensible choice and it is the resistance faced by consumers to innovation, due to the probable deviations from an adequate status quo or because it clashes with their belief structure (Ram & Sheth, 1989). Ram (1987) pointed out that innovation poses change and opposition to change should be anticipated. Sheth (1981) stated that risk alertness and conflicts of habit are the reasons to reject changes. Risk alertness includes responsiveness to functional, financial risk, and conflicts of habit are defined as cognitive resistance (Ram, 1989).

According to Booz, Allen and Hamilton (1982), the need to study the innovation resistance is due to a very high rate of new product failure encountered by most of the businesses. Thus, Ram (1989) has developed this theory to explain why customers resist innovations.

IRT is widely used in the context of electronic commerce (Lian & Yen, 2014). Molesworth and Suoritti (2002) had applied IRT in researching buying car online. Besides, Lian, Liu, and Liu (2012) used IRT to understand the user recognition in

online shopping. Moreover, Bakhit (2014) had conducted a research which aimed to evaluate the consumer's resistance to various eco or green innovative technologies by adopting IRT model. Lastly, Gurtner (2014) has applied IRT to examine the resistance factors of consumers toward the use of mobile health applications.

Table 2.1: Definition of Five Barriers in Innovation Resistance Theory

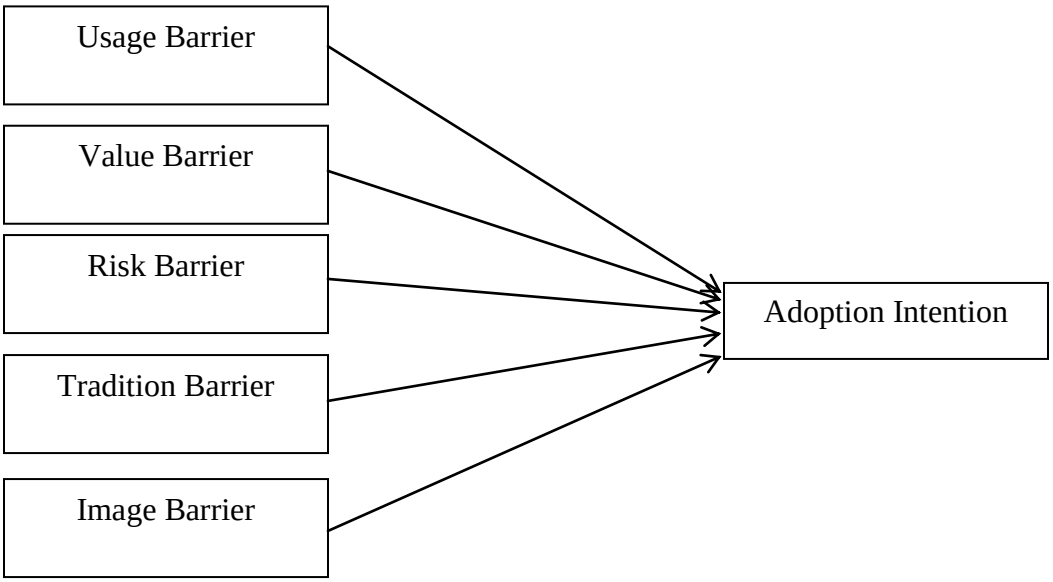
Functional Barriers	
Usage Barrier	The consumer required longer time to get use to the innovation if the usage of the innovative product is incompatible with the previous experiences of consumers, beliefs, acceptance conditions and habits,
Value Barrier	The user will accept the change if the innovative product produces a greater value than the current product does.
Risk Barrier	User is not able to evaluate the uncertainties that will occur when using the innovative product and the user does not sufficiently fathom the innovation. This will cause the users to reject the innovation.
Psychological Barriers	
Tradition Barrier	When the innovation alters the existing culture of user and clashes with it, the tradition barrier occurs. Greater conflict will lead to greater innovation resistance.
Image Barrier	Image barrier is formed if the consumer has a negative expectation on the instigating brand, industry, country or effects of the innovation.

Source: Ram and Sheth (1989)

Perceived Cost Barrier	The degree to which consumer expects that using a particular technology will cost money.

Source: Peng, Xu and Liu (2011)

Figure 2.1: Conceptual Model of Innovation Resistance Theory



Adopted from: Ram and Sheth (1989)

All five concepts from IRT would be adapted, specifically usage, value, risk, tradition and image barriers and another perceived cost barrier (PCB) from negative valence theory as independent variables to examine the barriers towards adopting MC among Gen X in Malaysia. The definitions of all the variables as mentioned above have been shown in Table 2.1. PCB is added since several studies suggest that perceived cost is a barrier against the adoption of new technologies including those related to mobile service (Luarn & Lin, 2005). This result is consistent with the research done by Wei, Marthandan, Chong, Ooi, and Arumugam (2009), which identified that the perceived cost has negative impact to the adoption of MC among the consumers. Hence, PCB is an appropriate factor to examine the barriers of the adoption of MC.

2.2 Review of Prior Empirical Studies

2.2.1 Adoption Intention

Adoption intention refers to the consequences of the sum of the variables that culminate into an intention demonstrating that the consumer is willing to perform certain actions (Joubert & Belle, 2013). In this research, adoption intention refers to degree of intention of consumers to adopt MC (Lian & Yen, 2013).

Past studies had indicated that drivers of consumer resistance will affect the adoption intention of innovation. Kleijnen, Lee and Wetzels (2009) concluded that drivers of consumer resistance have a negative relationship with adoption intention of innovation. A focus-group was conducted. 58 subjects were approached at central shopping in Netherlands. Inductive and theory-based approaches were used to analyze the data (Kleijnen et al., 2009).

Based on the research done by Laukkanen et al. (2007), adoption intention of MC is negatively affected by functional and psychological barriers. Questionnaire was provided on the website of Finland Scandinavian bank,. 1,151 non-users' responses turned out to be valid and Kruskal-Wallis tests was employed to analyze the construction of the sum variables (Laukkanen et al., 2007).

Peng, Xu and Liu (2011) stated that perceived risk and cost will gave a negative impact to adoption intention of MC. The respondents participated are junior and senior students in a provincial university in China. 186 responses were completed and to test the data collected, Structural Equation Modeling (SEM) technique was used (Peng et al., 2011).

Besides, Yu and Li (2015) have conducted an analysis regarding the consumer resistance to adopt mobile banking in Thailand and Taiwan. Online questionnaire surveys were distributed to mobile commerce users and a total of 1,861 valid responses were gathered in these two countries. Partial Least Square has been employed to examine data obtained and result showed that all the barriers in IRT have negative relationship with the adoption intention of MC (Yu & Li, 2015).

In addition, an empirical study was conducted by Laukkanen and Kiviniemi (2010) to investigate how information influences IRT barriers of mobile banking in Finland. 1,551 valid samples were collected from the bank customers and structural equation modeling had been used to assess the hypotheses. The finding indicated that information has significant effect to the IRT barriers which in turn negatively affect the adoption intention to mobile banking (Laukkanen & Kiviniemi, 2010).

In short, the findings of these past studies are consistent with the hypotheses of this study whereby usage, value, risk, tradition, image and perceived cost barriers have negative relationship with the adoption intention of MC.

2.2.2 Usage Barrier

Usage barrier is defined as the resistance towards a new invention due to the inconsistency with current routine and plan (Barati & Mohammadi, 2009). Davis (1989) claims that it is an obstruction caused by a perception that adopting the innovation will use great amount of effort.

A study by Rahman (2013) about deficiency in proficiency affecting the adoption of m-commerce stated that inability to read and write will restrict the adoption. Interviews were conducted on 27 stakeholders in Bangladesh and the result indicates that deficiency in proficiency negatively affects the adoption of m-commerce. Qualitative content analysis was selected to analyze the interview transcript (Rahman, 2013).

A research by Mahatanankoon and Vila-Ruiz (2007) found out that the inefficiency of device affects adoption of m-commerce. Incompetency of mobile device will affect the usage. Web-based survey on 215 university students was collected in United States. Factor analysis determined that a negative relationship exists between device inefficiency and MC usage behaviors (Mahatanankoon & Vila-Ruiz, 2007).

Past study by Bouwman, Carlsson, Molina-Castillo, and Walden (2007) researched on cognitive accessibility in mobile usage. It is the knowledge to use new technology and understand how it works. 484 Finnish consumers responded to their survey and confirmatory factor analysis (CFA) showed that cognitive accessibility will negatively affect mobile service usage (Bouwman et al., 2007).

A quantitative research by Suki (2011) regarding perceived ease of use affects adoption intention of 3G services on cell phone. Survey questionnaire are conducted in Malaysia with 100 usable responses and multiple linear

regression (MLR) was employed to analyze the survey collected. The result indicated that perceived ease of use positively affects adoption intention of 3G services on cell phone. Thus, usage barriers will have negative relationship with the adoption intention (Suki, 2011).

Soliman and Salem (2014) have carried out a quantitative research about whether perceived ease of use has any relationship with intention to adopt mobile instant messenger. Self-administered questionnaire on 378 responded students are collected back from universities in Saudi and data is analyzed by linear regression and showed that perceived ease of use positively affect the intention to adopt mobile instant messenger thus barriers of ease of use will cause a negative relationship (Soliman & Salem, 2014).

Deficiency in proficiency is related to usage barriers as the illiteracy will negatively affect the adoption. Incompetency of mobile device is related to usage barrier and it negatively affects m-commerce adoption. Cognitive accessibility which is about the knowledge in mobile usage, negatively affects the adoption. Thus, the above studies support our first hypothesis that usage barrier negatively affect m-commerce adoption.

2.2.3 Value Barrier

Value barrier is a resistance towards usage of products or services when they do not fulfill user's perception of performance-to-price value in contrast with other substitutes (Rammile & Nel, 2012). It is also an obstruction due to the sacrifice of monetary in the consumption process of product and service (Morar, 2013).

Aslam, Khan, Tanveer, and Amber (2011) have conducted quantitative research on low perceived value affecting adoption towards internet banking. Structured questionnaires with 520 responses from 10 banks in Pakistan are collected and analyze by SPSS for descriptive statistics. It shows that low perceived value negatively affect AI of internet banking (Aslam, Khan, Tanveer, & Amber, 2011).

Another quantitative research is from Antioco and Kleijnen (2010) on lack of value affecting technological innovations adoption. Survey questionnaires on 229 master students were collected back and analyze by partial least squares (PLS). Results specify that there is negative relationship between lack of value and technological innovations adoption (Antioco and Kleijnen, 2010).

Agwu (2013) carried out a quantitative research on value barrier negatively influence internet banking adoption. 630 usable survey questionnaires from individuals in United Kingdom are obtained and the results show that these two variables have a negative relationship (Agwu, 2013)

Quantitative research carried out by Sun, Cao and You (2010) states that perceived usefulness is positively affect the adoption intention of mobile service. Online questionnaire with 228 responses was conducted in China and analyze by confirmatory factor analysis. Results showed that the hypothesis is

supported and thus the barrier of value will show negative relationship between the variables. (Sun et al., 2010)

Kazi (2013) conducted a quantitative survey about positive relationship exists between intention to adopt internet banking service and perceived usefulness. 220 students from universities in Pakistan responded to their self-administered questionnaire. The data are analyzed by multiple linear regressions and show that perceived usefulness will positively influenced the intention to use internet banking service (Kazi, 2013).

Maity (2014) carried out a quantitative research states that perceived usefulness and intention of adopting mobile services have a positive relationship. The survey was conducted on 9066 respondents from Thailand, India, Bangladesh, Sri Lanka and Pakistan and data was analyze by Probability Proportionate to Size (PPS). It was then concluded that the hypothesis was supported. Thus, a barrier in perceived usefulness will have negative relationship with adoption intention (Maity, 2014).

Impact of value, perceived value and perceived usefulness is regarded as the value perceived by consumers. Results show that there is positive effect of value towards the adoption intention. Thus, these studies support our second hypothesis that the value barrier has negative relationship with m-commerce adoption.

2.2.4 Risk Barrier

According to Marett, Pearson, Pearson, and Bergiel (2015), risk barrier can explained as uncertainty concerning probable undesirable outcomes result from adopting a product or service. Besides, risk barrier is the degree of uncertainties which inherent in and entail by innovations (Barati & Mohammadi, 2009).

The first empirical study is done by Luo, Li, Zhang, and Shim (2010) about how do individual's multi-faceted risk perception influence the innovations acceptance and a negative relationship is shown between these 2 variables. PLS has been used to examine the proposed hypotheses. A survey is conducted to examine on 180 undergraduate business students.

The second research which is done by Brown, Cajee, Davies and Stroebel (2003) explores key barriers of intention to adopt mobile phone banking. The hypotheses are examined using MLR analysis. 162 mobile banking users from South Africa were approached and proven that risk barrier is affecting MC adoption negatively (Brown et al., 2003).

Another study had done by Joubert and Belle (2009) regarding the significance of risk on intention to adopt M-commerce. 110 responses to the 'early adopter survey' were tested using PLS and it showed that vendor risk, which is one of the perceived risks exerts a negative relationship with the adoption intention of MC (Joubert & Belle, 2009).

Another study is done by Shin (2009) which finds out the intention to use mobile wallet that affected by users' perceived security. 296 usable surveys are obtained and the result is analyzed by SEM. The finding reveals that substantial influence exists between users' perceived security and adoption intention of mobile wallet (Shin, 2009).

Another quantitative study which is done by Munusamy, Annamalah, and Chelliah (2012) measured the impact of innovation resistance among bank customers in Malaysia. The result is gathered by using questionnaire-based survey on those selected banks in Malaysia and multiple regression analysis is used. Based on the result gathered, it is concluded that perceived risk is negatively affect adoption of online banking in Malaysia. (Munusamy et al., 2012)

Another study done by Liébana-Cabanillas, Sánchez-Fernández, and Muñoz-Leiva (2014) is about the antecedents of the adoption of the new mobile payment systems. An online survey is done. 2012 valid questionnaires were collected and the result was analyzed by using SEM, showing that perceived risk is negatively related to the adoption intention (Liébana-Cabanillas, F. et al., 2014)

2.2.5 Tradition Barrier

Tradition barriers refers to obstacles originate when a technology innovation poses a change in customer's established tradition (Mohtar, Abbas, & Baig, 2015). Tradition barrier also define as conflict between changes of innovation and users' traditional culture (Lian & Yen, 2013).

The first empirical study is done by Molesworth and Suortti (2001) about the resistance factors of online high-cost purchase among consumers. 8 individual semi-structured interviews were conducted. Only 8 target respondents were selected from a university in England due to the stringent selection process. The result concluded that tradition barriers negatively influenced innovation resistance among consumers in online high-cost purchase (Molesworth & Suortti, 2001).

Next research is conducted by Lian and Yen (2013) about the effect of tradition barrier on M-shopping intention in the cosmetic industry. According to the survey questionnaire from 178 Small and Medium Enterprise (SME) in Taiwan which was tested by multiple linear regression analysis, there is a negative relationship of tradition barrier on M-shopping intention (Lian & Yen, 2013).

The last study is from Gutner (2014) who examines different forms of resistance in the context of mobile applications and uses SEM for analysis. Based on the survey done on 752 Smartphone users in Germany, it shows that tradition barrier gives a negative impact on the adoption intention toward mobile applications (Gutner, 2014).

Another quantitative study which is conducted by Elbadrawy, Aziz, and Hamza (2012) figured out the main barriers against m-banking adoption in Egypt. 350 questionnaires were distributed but only 229 valid questionnaires were collected. A t-test analysis is used in this research. As conclusion, tradition barrier is negatively affected m-banking adoption (Elbadrawy et al., 2012)

Study done by Dasgupta, Paul, and Fuloria (2011) examined the reasons influencing behavioral intention of m-banking adoption in India. Total of 437 questionnaires were given out but only 325 questionnaires are usable in that study. A regression analysis has been used to analyze the result gathered. This study concluded that tradition barrier have a negative effect on the behavioral intention towards mobile banking. (Dasgupta et al., 2011)

2.2.6 Image Barrier

Image barrier is linked with the innovations identity like the product category, brand name, or originating nation (Elbadrawy & Aziz, 2011). According to Claudy (2011), image barrier is negative thoughts of individuals toward technology tools and perceived complication of use.

Firstly, Elbadrawy and Aziz (2012) had conducted an empirical study to discover the causes behind the resistance towards m-banking adoption. 380 valid self-administered questionnaires are collected from Alexandria and Cairo's consumers in Egypt. ANOVA test is used and the findings indicated that image barrier is a resistance factor to the mobile banking adoption among the postponers, opponents and rejectors (Elbadrawy & Aziz, 2012).

Secondly, Kuisma, Laukkanen, and Hiltunen (2007) had conducted a research to identify factors behind resistance towards online banking in Finland. 30 bank customers were interviewed using the means-end approach and the laddering interviewing technique. Results showed that perceived image barrier has a negative relationship with the adoption of innovation (Kuisma et al., 2007)

Next, Lian, Liu and Liu (2007) had conducted survey questionnaire and collected 178 usable responses from university students in Taiwan. The intention of this research is to explore the reasons as to why consumers refuse to engage online shopping and regression analysis is deployed to test the hypotheses. The result shows that image barrier is the main reason that hinder the consumers to shop online (Lian et al., 2007).

Furthermore, Rammile and Nel (2012) had conducted a study to identify the reasons to resist cell phone banking adoption among the non-users in South Africa. Survey questionnaire is distributed to 288 respondents and covariance–based SEM is used to determine the acceptance of hypotheses. The result indicates that image barrier has negative relationship with the intention to use mobile banking (Rammile & Nel, 2012).

Lastly, Bakhit (2014) had conducted a quantitative study to determine the resistance of consumer towards innovations. The survey questionnaire is distributed to 50 household in North Lebanon and MLR analysis has been employed to examine the hypotheses. The result signifies that image barrier has a moderate effect to resistance (Bakhit, 2014).

2.2.7 Perceived Cost Barrier

Perceived cost barrier refers to additional expenses that incurred in moving from wired online payment services to mobile payment services (Lu, Yang, Chau & Cao, 2011). It is also defined as an extent which one think that cost will be incurred if mobile payment is used which included payment for mobile devices, internet description fees, and transaction costs related to technology adoption (Yang, Lu, Gupta, Cao, & Zhang, 2012).

First, Yu (2012) had collected 441 valid samples by recruiting respondents in major downtown areas of Taiwan. The structured questionnaires were examined using partial least squares regression (PLSR). This study is about the factors affecting individuals to use m-banking and it showed that perceived cost barrier is negatively affecting people intention to adopt mobile banking (Yu, 2012).

In addition, Lu, Yang, Chau, and Cao (2011) had conducted a web-based survey and collected 961 valid responses which examined using chi-square test from the users of Alipay which offers mobile payment services. The hypotheses were tested using PLS. This research is investigating how consumers' adoption intention of mobile payment services is affected by positive and negative valence factors. The results specified that perceived cost barrier negatively affects students' adoption intention of mobile payment services but had little significant impact to workers (Lu et al., 2011).

Furthermore, the research done by Sripalawat, Thongmak and Ngramyarn (2011) identified reasons influencing m-banking acceptance and explored the impacts brought by these factors to provide guidance for commercial institutions to draw the attention of customers. 195 usable surveys were collected from bank customers and mobile users in the Bangkok metropolitan area which is fully supported by wireless infrastructures and the data collected

were tested using MLR analysis. The findings specify that perceived cost barrier is the obstructive factor hindering m-banking services adoption (Sripalawat et al., 2011).

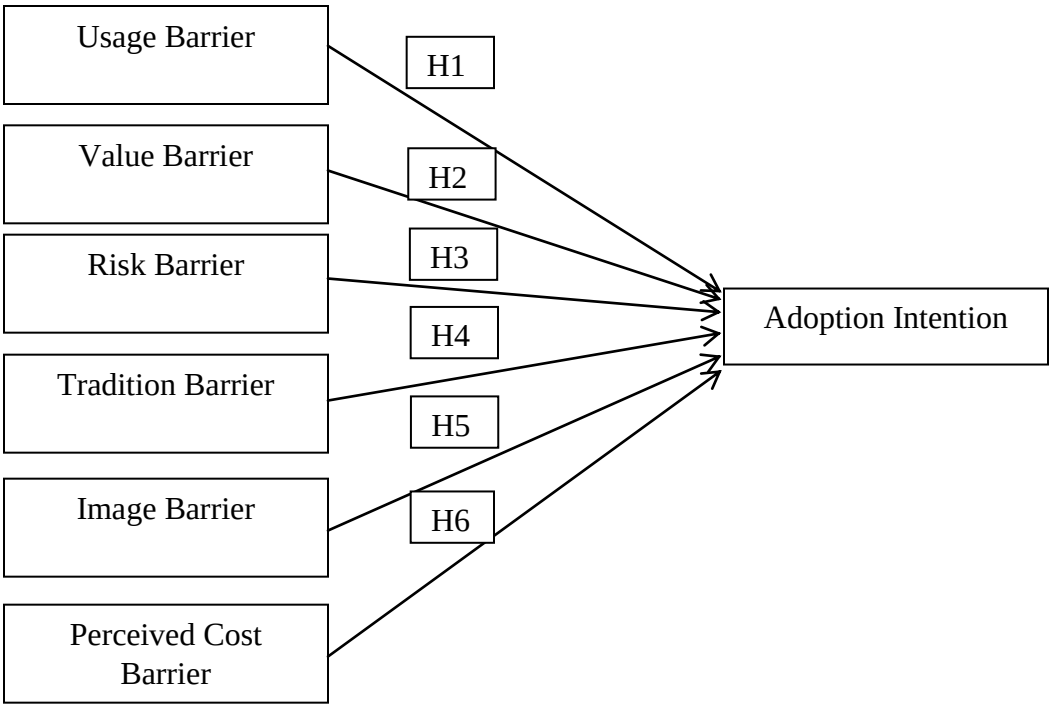
Moreover, an empirical study had been done by Pham and Ho (2015) to examine the resistance of consumers to adopt mobile payments in Taiwan. The targeted respondents of this research are mobile payment users and 402 valid surveys were collected from the web-based survey. Based on the results conducted by structural modeling analysis, it can be concluded that PCB has an adverse effect towards the mobile payment adoption (Pham & Ho, 2015).

Besides, Luarn and Lin (2005) had carried out a research to investigate the factors that resist behavioral intention to adopt mobile banking in Taiwan. The target respondents are the traditional branch-based banking users and 180 set of survey questionnaires are collected. SEM is used to test the data obtained and the result reveals that perceived cost barrier has negatively influence adoption intention of m-banking in Taiwan (Luarn & Lin, 2005).

Lastly, an empirical analysis has been done by Chong (2013) to explore the continuance intention of mobile commerce among the Chinese consumers in China. Data was obtained from the 410 MC users and SEM has been employed to examine the hypotheses. According to the findings, perceived cost barrier is negatively affected continuance intention of MC (Chong, 2013).

2.3 Proposed Conceptual Framework/ Research Model

Figure 2.2: Proposed Conceptual Framework of Barriers to Mobile Commerce Adoption among Generation X in Malaysia.



Adapted from: Ram and Sheth (1989); Peng, Xu and Liu (2011)

2.4 Hypothesis Development

Based on the literature review, hypotheses have been developed for this research:

Table 2.2: Proposed Hypotheses of the Study

H1: There is a negative relationship between usage barrier and adoption of mobile commerce among generation X in Malaysia.
H2: There is a negative relationship between values barrier and adoption of mobile commerce among generation X in Malaysia.
H3: There is a negative relationship between risk barrier and adoption of mobile commerce among generation X in Malaysia.
H4: There is a negative relationship between tradition barrier and adoption of mobile commerce among generation X in Malaysia.
H5: There is a negative relationship between image barrier and adoption of mobile commerce among generation X in Malaysia.
H6: There is a negative relationship between perceived cost barrier and adoption of mobile commerce among generation X in Malaysia.

Source: Developed for the research

2.5 Conclusion

This chapter provides the literature review of previous studies and IRT model is employed in this research. The research model and hypotheses have been developed in this Chapter. Next, Chapter 3 will discuss about the research methodology of this study.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides an overview for the sampling techniques, target population and the research design. Variables and measurement as well as the data analysis techniques are also included in this Chapter.

3.1 Research Design

This research is aimed to explore the barriers of MC adoption among generation X in Malaysia. The unit of analysis is generation X from Negeri Sembilan and Selangor (KL). This is a quantitative study as it is measurable and quantifiable by using numerical data for the purpose of data analysis gathered through questionnaire survey (Zikmund, Babin, Carr, & Griffin, 2010). The sample size for this paper is 200 and self-administrated questionnaire will distribute to target respondents, generation X in Malaysia. Survey method is used as it is cost efficient to collect data in large amount (Saunders, Lewis, & Thornhill, 2009). Based on Fowler (2008), survey is primarily seeking the answer from respondents in a population with a set of questions to describe the population. Survey research is usually a mean used to perform a demonstrative image of characteristics and assertiveness of an outsized population (Check & Schutt, 2012). This is a cross-sectional research as it focuses on the barriers to MC adoption among generation X in Malaysia for a certain period and it is only an incident to be studied at a single point in a moment (Trochim, 2006).

3.2 Population, Sample and Sampling Procedures

Generations X in Malaysia especially those from Selangor (Kuala Lumpur) and Negeri Sembilan is the target population of this research. According to MCMC (2014), 30.1% of mobile phone users are generation X. These areas are chosen due to their highest penetration rate of 153.3% and 156.1% among Malaysian (MCMC, 2014). This study would not indicate any sampling frame due to inability to obtain the list of generation X in targeted areas.

Sampling is necessary as survey the entire targeted population is unrealistic due to the budget and time constraints (Saunders et al., 2009). According to Latham (2007), using appropriate sampling methods permits researchers to conduct research more efficiently with greater flexibility and accuracy. Convenience sampling is selected to conduct the survey since the sampling frame is unknown. Weir and Jones (2009) stated that convenience sampling is the most suitable method to get responses from a huge population. Convenience sampling is widely used to collect a huge number of responses with lesser time in cheaper way.

Convenience sampling involves respondents who are willingly taking part in the research (Latham, 2007). According to Forza and Filippine (1998), they proposed that a sample size in the range of 100 to 200 is considered sufficient and satisfactory. This study is only interested in achieving a sample size of 200 people. As such, target respondents are continually invited to participate until the desired sample size reached. Since the goal of convenience sampling is easy access, participants are simply chosen from places near mobile phone stores.

3.3 Data Collection Method

To collect primary data, self-administered surveys will be used as it decreases the mistake done which cause by respondents' skills and personalities (Phellas, Bloch & Seale, 2011). The questionnaires are prepared in English language and distributed to the target respondents by using self-delivery method. Direct method is used for collecting data back from respondents. The survey was conducted from 10 May 2015 to 24 May 2015. Those questionnaires were distributed at mobile phone stores located in Negeri Sembilan and Selangor (KL) state.

3.3.1 Pilot Test

Pilot test is required to be conducted before obtaining the actual data to collect the feedback from the target respondents in order to provide a more relevant survey questionnaire. According to Arain, Campbell, Cooper and Lancaster (2010), it is sufficient to examine the validity of survey if there are 20 respondents participate in the pilot test. Therefore, 30 target respondents were selected to take place in the pilot test and the test took place at Block I of UTAR, Kampar. Then, reliability test had been carried out to test the data collected from pilot test. Cronbach's alpha values are shown in Table 3.1. The values fall within the range of 0.720303 to 0.890512. Hence, it can be concluded that the survey questionnaires had met the reliability test's acceptable level which is greater than 0.7 to examine the validity of the data collected.

Table 3.1: Cronbach's Alpha Values of Pilot Test

Variables	Number of Items	Cronbach's Alpha
Usage Barrier	4	0.767073
Value Barrier	5	0.724063
Risk Barrier	5	0.867447
Tradition Barrier	4	0.781647
Image Barrier	3	0.890512
Perceived Cost Barrier	5	0.720303
Adoption Intention	6	0.890457

Source: Developed for the research

3.4 Variables and Measurement

Appendix 3.1 shows sources of variables and descriptions of items in each independent variable and dependent variable. There are 26 items for the six barriers and 6 items for adoption intention being investigated to establish the relationships between IVs and DV. The items were adapted from preceding researches and it is modified in this research to fit the context of IRT. Table 3.2 shows the measurement of each variable contained in the questionnaire. 5-point Likert scale would be employed in this study instead of 7-point Likert scale. 5-point Likert scale ranged from (1) "Strongly aagree" to (5) "Strongly disagree". It is because 7-point Likert scale is lengthier and may discourage the respondents from completing the survey (Daves, 2008). Whereas, 5-point Likert scale is convenient for the respondents to view and choose based on the list of scale descriptors (Maringka, 2012).

Table 3.2: Measurement of Variables

Variables		Measurement	Scale of Measurement
Demographic Profile	Gender	Nominal	
	Year of Birth	Ordinal	
	Race	Nominal	
	Marital Status	Nominal	
	Education Level	Ordinal	
	Income Level	Ordinal	
	Mobile Commerce (user & non-user)	Nominal	
Independent Variables	Usage Barrier	Interval	5-point Likert Scale
	Value Barrier	Interval	5-point Likert Scale
	Risk Barrier	Interval	5-point Likert Scale
	Tradition Barrier	Interval	5-point Likert Scale
	Image Barrier	Interval	5-point Likert Scale
	Perceived Cost Barrier	Interval	5-point Likert Scale
Dependent Variable	Adoption Intention	Interval	5-point Likert Scale

Source: Developed for the research

3.5 Data Analysis Technique

3.5.1 Descriptive Analysis

Zikmund, Babin, and Carr (2010) states that process of data analysis will begin with descriptive analysis which transforms raw data into an understandable form. Variables can be explained in numerical focusing on dispersion and central tendency (Saunders, et al., 2009). Frequency distribution and central tendencies analysis will be conducted in this study. Demographic elements consist of gender, age, marital status, income level, and user or non-user of MC. Data will be illustrated in frequency and percentage in table with brief explanations. To search for a general trend, central tendency analysis is used to combine and summarize all the information (Malhotra & Peterson, 2006). Mean, standard deviation and coefficient of variation of every item in questionnaire are normally included in the summarization of data to analyze each of the independent and dependent variables. Results generated will be presented in pie charts after completing the analyses.

Reliability test and normality test will be conducted after the data collected. Cronbach's Alpha test is the reliability test to make sure the measurement is free from unfairness in order to get reliable outcomes (Sekaran, 2003). Reliability test measures the consistency of quantifying variables (Choy & Ng, 2011). According to Cronbach and Shavelson (2004), data that gets value of 0.7 and above is reliable whereas value lower than 0.6 indicates unsatisfactory reliability. The skewness and kurtosis refers to the distribution shape and they are used in the normality test in this study to ensure the data are normally distributed (Cohran, Steed & Ong, 2010). The benchmark of normality test is

between the absolute value of 2 for skewness and kurtosis to obtain normally distributed data.

3.5.2 Inferential Analysis

Inferential analysis is conducted to generalize characteristics from a sample to a population (Gabrenya, 2003). In this study, Pearson Correlation test is applied to identify correlation between the variables and solve multicolliearity which will occur when IVs are correlated, presenting insignificance indicators of a DV (Lin, 2006). The coefficient value should not be greater than 0.90 to avoid multicollinearity among IVs (Hair, Black, Babin, & Anderson, 2009). The table below indicates the correlation level:

Table 3.3 Relationship between Coefficient Value and Correlation

Coefficient (*r*)	Correlation
0.10 – 0.29	Weak
0.30 – 0.49	Medium
0.50- 1.00	Strong

Source: Garcia (2010)

This study applies MLR to test the proposed hypotheses. MLR is used to investigate how multiple IVs are related to a DV (Jim, 2005). In this paper, DV is the adoption intention of mobile commerce while the six IVs were proposed as the adoption barriers. Those relationships can be indicated by drawing a best-fit-line or calculating a regression equation (Saunders et al., 2009). MLR is selected as there are several variables used to predict a value on a quantitatively measured criterion variable (Meyers, 2005). MLR assumes theoretically that for every item change in the IV, a constant and consistent change will occur in the DV (Brant, 2007). Therefore, it is appropriate to apply MLR to investigate the relationship between resistance factors and adoption intention of mobile commerce.

Tables below show the assumptions and equation for MLR:

Table 3.4 Assumptions of Multiple Linear Regression Analysis

1. The variables must be normally distributed.
2. The variables must be measured without error.
3. Having linear relationship between variables.
4. Having homoscedasticity of data.

Source: Williams, Grajales, & Kurkiewicz (2013)

Table 3.5 Equation for Multiple Linear Regression Analysis

$\gamma = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$
γ = Adoption intention of MC
α = Regression constant
X_1 = Usage barrier
X_2 = Value barrier
X_3 = Risk barrier
X_4 = Tradition barrier
X_5 = Image barrier
X_6 = Perceived cost barrier
$\beta_1 \ldots \beta_6$ = Regression beta coefficient association with each X_i

Source: Developed for the research

3.6 Conclusion

Chapter 3 has described the design of the research and the methodology used. The following chapter will illustrate the findings that generated from the data collected.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

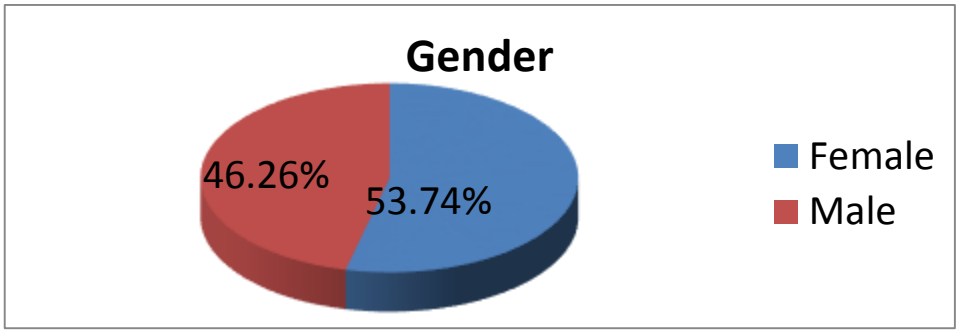
This chapter tends to present the findings generated from the data collected and the demographic profile of the respondents.

4.1 Descriptive Analysis

4.1.1 Demographic Profile

Demographic profile of the respondents is presented including gender, age, marital status, education level, race, income level, and category of user or non-user of mobile commerce. 227 sets of survey questionnaires are usable.

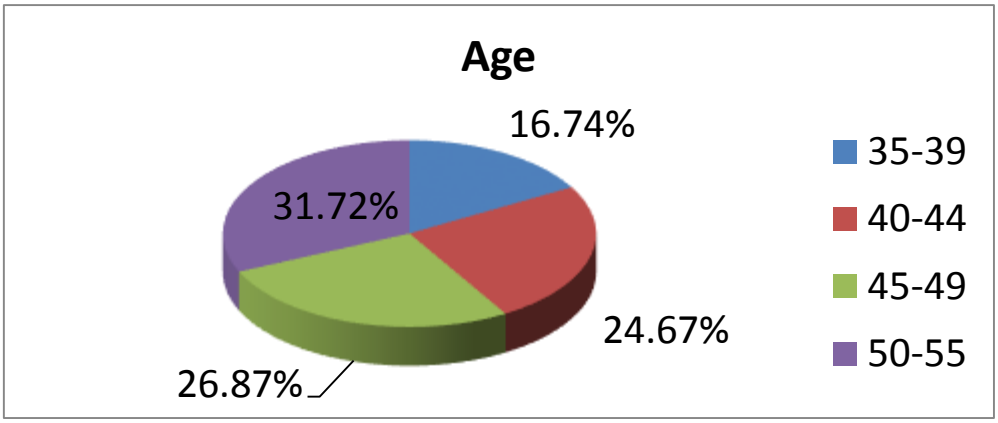
Diagram 4.1: Percentage of Respondents' Gender



Source: Developed for the research

According to Diagram 4.1, there are 122 females (53.74%) and 105 males (46.26%) out of the 227 respondents.

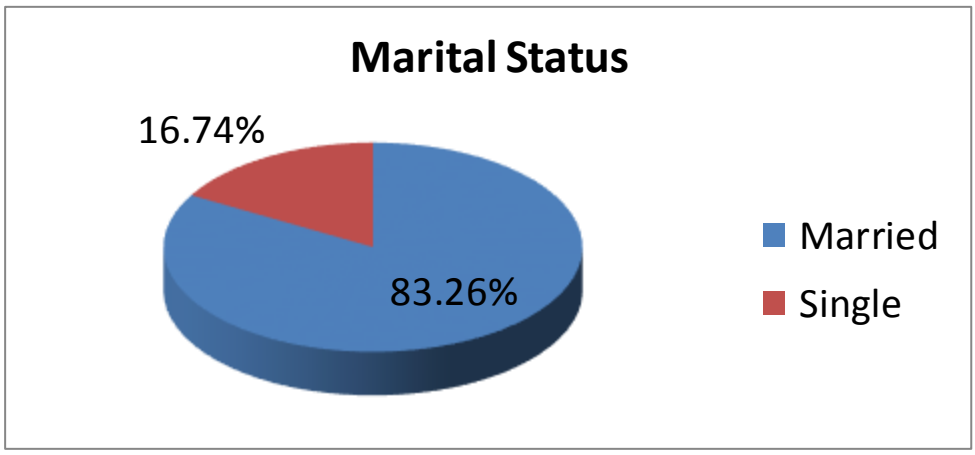
Diagram 4.2: Percentage of Respondents' Age



Source: Developed for the research

Diagram 4.2 demonstrates that the 72 (31.72%) respondents are ranged from 50-55, 61 (26.87%) respondents ranged from 45-49, 56 (24.67%) respondents are ranged from 40-44, and 38 (16.74%) respondents are ranged from 35-39.

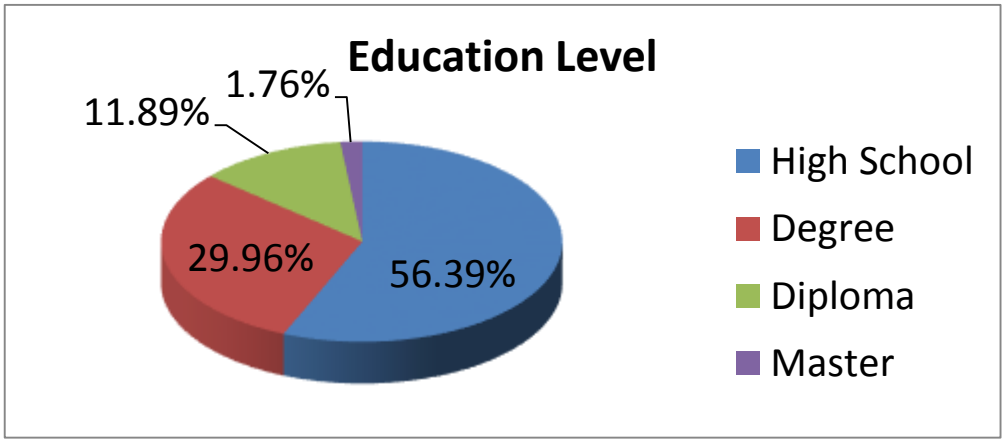
Diagram 4.3: Percentage of Respondents' Marital Status



Source: Developed for the research

Diagram 4.3 indicates that 189 (83.26%) respondents are married while only 38 (16.74%) respondents are single.

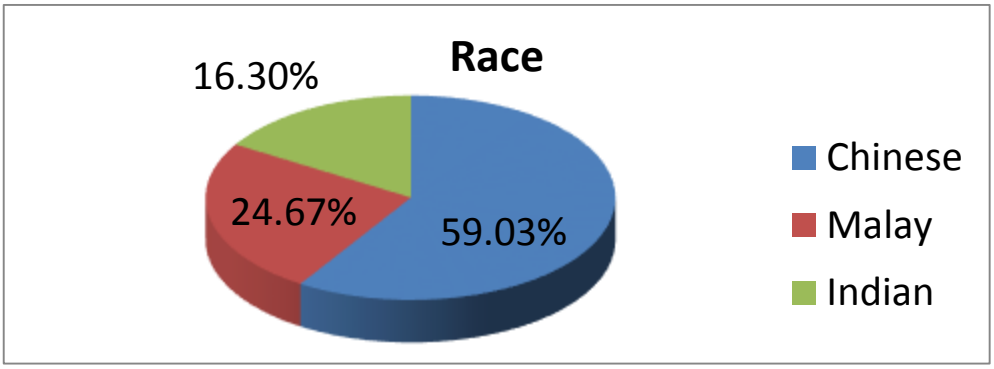
Diagram 4.4: Percentage of Respondents' Education Level



Source: Developed for the research

Diagram 4.4 indicates that 128 (56.39%) respondents achieved high school education level, 68 (29.96%) of the respondents possess degree holders, 27 (11.89%) respondents are diploma holders, and the remaining 4 respondents are master holders (1.76%). None of the respondents are without educational background.

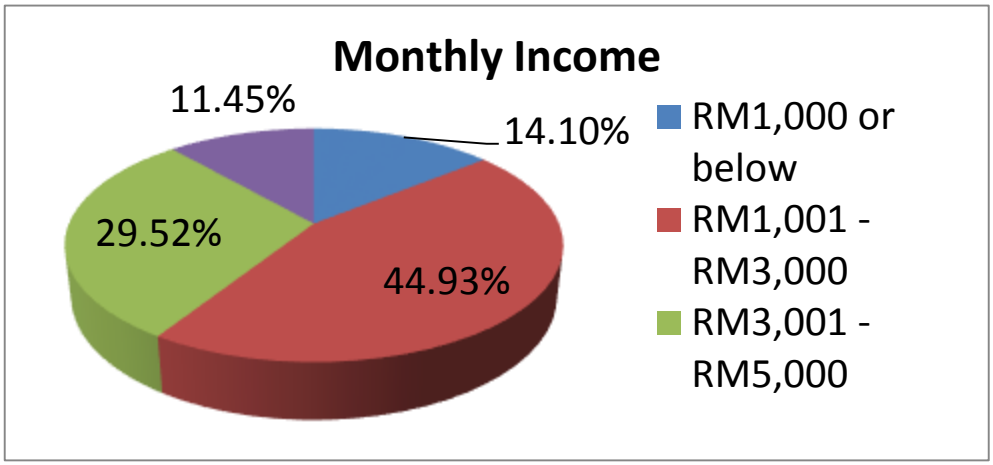
Diagram 4.5: Percentage of Respondents' Race



Source: Developed for the research

Diagram 4.5 illustrates that the respondents are mostly Chinese, which comprises of 134 respondents (59.03%), 56 (24.67%) respondents are Malay and 37 (16.3%) respondents are Indian.

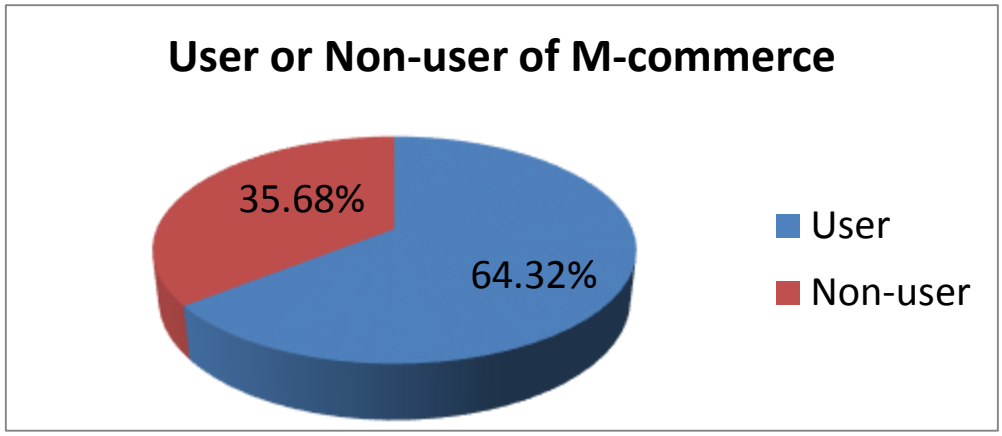
Diagram 4.6: Percentage of Respondents' Income Level



Source: Developed for the research

According to Diagram 4.6, majority the respondents (44.93% or 102 respondents) have monthly income of RM1, 001 - RM3,000, 67 or 29.52% have monthly income of RM3,001 - RM5,000, 32 or 14.10% of the respondents' income level fall into the category of RM1,000 or below and 11.45% (26 respondents) of the respondents have monthly income above RM5,000.

Diagram 4.7: Percentage of Respondents Based on User or Non-user of M-Commerce



Source: Developed for the research

Diagram 4.7 displays that 146 or 64.32% of respondents are non-user of M-commerce whereas 81 or 35.68% of respondents are user of M-commerce.

4.1.2 Central Tendencies Measurement of Constructs

Table 4.1 Central Tendencies Measurement of Constructs

Variables	Items	Means	Standard Deviation
Usage Barrier	UB1	2.01322	0.96615
	UB2	2.15859	1.07730
	UB3	2.14537	1.06056
	UB4	2.10132	1.09437
Value Barrier	VB1	2.00881	0.95469
	VB2	2.07930	0.95141
	VB3	1.96476	1.02560
	VB4	2.00664	0.98664
	VB5	1.96916	1.01925
Risk Barrier	RB1	2.09692	1.02592
	RB2	2.05727	1.03960
	RB3	2.12335	1.01438
	RB4	2.16300	0.98881
	RB5	2.15419	0.99023
Tradition Barrier	TB1	2.20264	0.96551
	TB2	2.26872	0.81090
	TB3	2.29075	0.83827
	TB4	2.26872	0.92317
Image Barrier	IB1	2.16300	0.97074
	IB2	2.16740	0.91603
	IB3	2.12775	0.97603
Perceived Cost	PCB1	2.51542	0.74873

Barrier	PCB2	2.39648	0.67940
	PCB3	2.42731	0.75712
	PCB4	2.40969	0.73140
	PCB5	2.42291	0.76829
Adoption Intention	AI1	4.00881	1.05592
	AI2	3.83700	1.05799
	AI3	3.92952	1.03238
	AI4	3.84141	1.02683
	AI5	3.96035	1.04890
	AI6	3.90749	1.01549

Source: Developed for the research

The overall means and standard deviations of 5 IVs and a DV in this study are shown in Table 4.1. In summary, the means of all the independent variables are more towards agreed which ranged from 1.96476 to 2.51542, whereas the means of dependent variable are more towards disagreed which ranged from 3.83700 to 4.00881 . The table also shows the standard deviations which represent the dispersion of data for all the variables. In a nutshell, the lowest standard deviation is 0.67940 while the highest amount is 1.09437.

4.2 Scale Measurement

4.2.1 Normality Analysis

Table 4.2 Normality Statistics

Variables	Items	Skewness	Kurtosis
Usage Barrier	UB1	1.19112086	1.43435573
	UB2	1.05079898	0.6623798
	UB3	1.09810816	0.78125241
	UB4	1.20737491	1.0039003
Value Barrier	VB1	1.24440962	1.38684812
	VB2	1.42662278	2.03380375
	VB3	1.48618147	1.9326288
	VB4	1.50594305	2.15759736
	VB5	1.4533474	1.91170299
Risk Barrier	RB1	1.02592035	1.052512257
	RB2	1.29123325	1.29222635
	RB3	1.18694438	1.10455997
	RB4	1.0526164	0.92851982
	RB5	0.73407405	0.13931201
Tradition Barrier	TB1	1.16076786	1.29967275
	TB2	1.17872697	1.45851847
	TB3	1.09052419	1.04978894
	TB4	1.04015527	1.08437662
Image Barrier	IB1	1.16085121	1.10340628
	IB2	1.33402557	1.82641443
	IB3	1.23876021	1.25573766

Perceived Cost Barrier	PCB1	0.42556175	0.00376459
	PCB2	0.93631967	0.36546209
	PCB3	0.95876223	0.36387895
	PCB4	0.83057105	0.50933384
	PCB5	0.88181705	0.9249299
Adoption Intention	AI1	-1.3827097	1.43627723
	AI2	-0.9134454	0.35620316
	AI3	-1.2941679	1.42733288
	AI4	-1.0873876	0.80417407
	AI5	-1.3129838	1.28738725
	AI6	-1.194201	1.16143592

Source: Developed for the research

This study had employed Skewness and Kurtosis test to verify the existence of normal distribution. According to Kaloyanov (2011), skewness is the degree of asymmetry in a frequency distribution. The distribution is aussumed to be positively skewed and would show a longer tail to the left if the skewness value is positive. On the contrary, the distribution is assumed to be negatively skewed and would then show a longer tail to the right if the skewness value is negative. Byrne (2010) proposed that the endogenous variables normality is satisfactory if the value of skewness is between ±2 and kurtosis value is between ±7. As shown in Table 4.2, skewness values range -1.3827097 and 1.50594305 while the kurtosis values range between 0.00376459 and 2.15759736. The absolute value of skewness is less than 2 and the absolute value of kurtosis is less than 7. Therefore, the assumptions of normality are fulfilled.

4.2.2 Reliability Analysis

Table 4.3: Summary of Reliability Analysis

Variables	Number of Items	Cronbach's Alpha
Usage Barrier	4	0.888357
Value Barrier	5	0.891432
Risk Barrier	5	0.887608
Tradition Barrier	4	0.867624
Image Barrier	3	0.885742
Perceived Cost Barrier	5	0.833619
Adoption Intention	6	0.809832

Source: Developed for the research

Table 4.3 illustrates the outcomes of reliability test for each variable. Variables are considered reliable if its Cronbach's alphas have at least a minimum value of 0.7 (Webb, Shavelson & Haertel, 2006). Therefore, all the items adapted in the questionnaire for this research can be concluded as reliable.

4.3 Inferential Analysis

4.3.1 Pearson Correlation Analysis

Table 4.4: Pearson Correlation Coefficients

Variables	UB	VB	RB	TB	IB	PCB	AI
UB	1.0000						
	<.0001						
VB	0.75636	1.0000					
	<.0001	<.0001					
RB	0.83622	0.86700	1.0000				
	<.0001	<.0001	<.0001				
TB	0.84734	0.83408	0.87899	1.0000			
	<.0001	<.0001	<.0001	<.0001			
IB	0.81468	0.79958	0.86894	0.85017	1.0000		
	<.0001	<.0001	<.0001	<.0001	<.0001		
PCB	0.78116	0.82285	0.85018	0.85690	0.82317	1.0000	
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	
AI	-0.82757	-0.83453	-0.87639	-0.88820	-0.85653	-0.82387	1.0000
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

Source: Developed for the research

As shown in Table 4.4, the correlation values range from 0.75636 to 0.87899 between the independent variables which signify a positive correlation. Conversely, the dependent variable has a negative relationship with all the independent variables which ranged from -0.82387 to -0.88820. As a result, no multicolinearity problem was revealed since none of the correlation values have higher than 0.90 in this research (Farrar & Glauber, 2005). Moreover, it

shows that the variables have p-values that are less than 0.05. Hence, there are significant relationships between the variables.

4.3.2 Multiple Linear Regressions (MLR)

Table 4.5: Summary of Model

Root MSE	0.34057	R-squared	0.8490
Dependent Mean	3.88693	Adjusted R-squared	0.8449
Coefficient Variance	8.76191		

Source: Developed for the research

The value of R^2 of all six factors is presented in Table 4.5 with a value of 0.8490. This signifies that all the 6 barriers could significantly account 84.9% of the variation in AI and the remaining deviation is comprised by other variables that are not included in this research.

Table 4.6: Multiple Linear Regression Analysis: ANOVA

Source	DF	Sum of Squares	Mean Square	F Value	Pr>F
Model	6	143.52506	23.92084	206.24	<.0001
Error	220	25.51728	0.11599		
Corrected Total	226	169.04234			

Source: Developed for the research

The differences among means are significant as long as the calculated F-value is greater than the value in F-table (Field, 2008). The F-value as shown in Table 4.6 is 206.24 with the significance level of <.0001 while the value obtained from the F table is 2.175. This indicates that the F-value is large and the model employed fit this research. Furthermore, p-value is less than 0.05. This shows that at least one of the six IVs can be used to explain and model

the DV. As a conclusion, the relationship between all barriers and AI in this research study is significant.

Table 4.7: Multiple Linear Regression: Parameter Estimates

Variables	Parameter Estimate	Standardized Estimate	t-value	Pr > |t|	Tolerance	Variance Inflation
Intercept	6.17507	0	56.43	<.0001	-	0
UB	-0.10816	-0.11390	-2.11	0.0362	0.23488	4.25747
VB	-0.14751	-0.14722	-2.59	0.0101	0.21309	4.69276
RB	-0.18242	-0.17564	-2.43	0.0161	0.13091	7.63902
TB	-0.38393	-0.33203	-4.89	<.0001	0.14865	6.72701
IB	-0.19898	-0.19550	-3.31	0.0011	0.19550	5.09896
PCB	-0.02805	-0.01899	-0.33	0.7427	0.20545	4.86737

Source: Developed for the research

According to Table 4.7, UB (p=0.0362), VB (p=0.0101), RB (p=0.0161), TB (p=<.0001) and IB (p=0.0011) have significant relationship with intention adoption of MC. TB has the greatest impact to influence the adoption intention of MC among these barriers. Nevertheless, PCB has no relationship with adoption intention since its p-value is more than 0.05. Hence, H6 is not supported. As a result, the equation for the model is formulated as follows: AI= 6.17507 - 0.11390 (UB) - 0.14722 (VB) – 0.17564 (RB) - 0.33203 (TB) - 0.19550 (IB) - 0.01899 (PCB)

On the other hand, variance inflation and tolerance have been employed to test the multicollinearity problem in this research. As shown in the table, variance inflation values of all IVs are less than 10 and values of tolerance are greater than 0.1. Therefore, the result indicates that no multillinearity problem has occurred in this study (Liao & Valliant, 2012).

4.4 Conclusion

This chapter clarified the demographic profile of the respondents, and the results generated from the data collected by using different analysis. According to the results, we would discuss the major findings, implications, limitations and recommendation of this study in chapter five.

CHAPTER 5: DISCUSSIONS, CONCLUSION AND IMPLICATIONS

5.0 Introduction

This chapter would summarize the demographic profile of target respondents and the result of the data analysis. Besides, it also provides the major findings, implications, limitations and recommendations for future research.

5.1 Summary of Statistical Analysis

5.1.1 Summary of Descriptive Analysis

Out of total 400 sets survey questionnaires, only 227 sets are usable. The response rate by generation X is 56.75%. Respondents of our study mostly constitute of females respondents with 53.74% while male respondents only occupy 46.26%. Most of our respondents are Chinese, aged from 50 to 55 and most of them are married. Most of the respondents' highest educational level is high school with monthly income ranging from RM1, 001 - RM3, 000. There are 146 (64.32%) out of our total respondents are the users of m-commerce.

According to SAS analysis, the lowest and highest means of UB, VB, RB, TB, IB and PCB are 1.96476 and 2.51542 respectively, meaning that all the variables are more towards agreed. Meanwhile, the dependent variable has a mean values from 3.83700 to 4.00881 shows that it is more towards disagreed.

For standard deviation, the lowest value is 0.67940 and highest value is 1.09437. Overall, the data evenly spreads around the central tendency.

5.1.2 Summary of Scale Measurement

The absolute value of skewness and kurtosis in normality statistics for our research are ±2 and less than 7 respectively. This shows that no significant violations occurred in our multivariate model. Each variable in our study are assumed to be reliable since the Cronbach's alpha values are more than 0.7.

5.1.3 Summary of Inferential Analysis

Based on Pearson correlation, all IVs have positive correlation since their correlation values range from 0.75636 to 0.87899. The UB and VB have the weakest correlation while VB has the strongest correlation with RB. On the contrary, all the correlation values of DV have negative values showing that there is negative relationship with all IVs. No multicolinearity problem was found due to every correlation values are lower than 0.90. The relationships between the variables are also significant as the p-values are below 0.05.

According to MLR analysis, the value of R^2 demonstrates that the six resistance barriers can justify 84.9% of the variation in AI. The model used fit this study because the F-value is bigger than the F-value from F-table. The results also display that at least one out of the six IVs can be used to illustrate the DV. Based on the analysis, the coefficients reveal that UB, VB, RB, TB and IB significantly affect AI whereas PCB does not affect AI significantly.

Table 5.1 Summary Table of Inferential Analysis

Variables	Hypotheses	P-value	Support or Not Support Hypotheses
UB	H1	0.0362	Support
VB	H2	0.0101	Support
RB	H3	0.0161	Support
TB	H4	<.0001	Support
IB	H5	0.0011	Support
PCB	H6	0.7427	Not Support

Source: Developed for the research

5.2 Discussion of Major Findings

5.2.1 Usage Barrier

This barrier has a negative relationship and significantly affecting the AI of m-commerce of generation X in Malaysia. The p-value generated from previous chapter has a value of 0.0362 which is less than 0.05 indicates UB is negatively affected AI. The greater the barrier, the lower the AI of m-commerce.

Our result is supported by Rahman (2013), Mahatanankoon and Vila-Ruiz (2007), and Bouwman et al. (2007) who undertook similar studies with us. According to Rahman (2013), the main reason this barrier exist is due to literacy level of users which limit them to secure their confidential

information of account in mobile when conducting transaction. The highest educational level of over 50% of our target respondents are high school. They might face confusion towards the usage and progress of transaction using mobile phones to make payment. Another factor is due to the inefficiency of device (Mahatanankoon & Vila-Ruiz, 2007). The requirement to make in navigation with mobile phone for every extra input reduces 50% of transaction through mobile (Mahatanankoon & Vila-Ruiz, 2007).

5.2.2 Value Barrier

VB achieves a p-value of 0.0101 which means that it has a negative relationship with AI of m-commerce. Our result agrees with previous researches by Mimoun et al. (2013), Verkasalo et al. (2010) and Roostika (2012) which stated that perceived value and adoption intention has a positive relationship. In another word, barrier in value has negative relationship with the adoption intention.

According to Ram and Sheth (1989), the reason consumers resist to embrace innovations is because it does not provide them a strong performance-to-price value. Generation X in Malaysia do not feel that it is worthwhile for them to switch from purchasing goods and services at physical merchandise to using mobile. Based on Mimoun et al. (2013) another reason value serves as a barrier is because users do not meet the desired experience such as convenience during the usage of m-commerce (Mimoun et al., 2013).

5.2.3 Risk Barrier

This barrier has been proven to establish a significant negative relationship with AI of m-commerce. It has generated a p-value < 0.05 which is 0.0161 from our SAS analysis. This is aligned with researches such as Luo et al.

(2010), Joubert and Belle (2009) and Rahman (2013) with the statement of significant negative influence exist between AI and perceived risk. Performance risk arises from the feeling of uncertainty about an innovation on their reliability (Ram and Sheth, 1989). The mobile user might get worry that their private and confidential information will leak by using MC. According to Luo et al. (2010) the existence of RB is due to the lack of education platform to raise the awareness of consumer regarding the securities issues of newly implemented technologies.

5.2.4 Tradition Barrier

TB is proved to be a significant variable that influences AI of m-commerce. It fulfilled the requirement of p-value < 0.05 with the coefficient of <.0001. It means that TB has a negative relationship with AI of m-commerce. It is also the most significant factor that affects AI because it has the lowest p-value in contrast with other variables.

The findings of our research are aligned with Lian and Yen (2013), Laukkanen et al. (2007) and Lu (2012) which produce similar results. TB is a type of psychological resistance results from a cultural change in consumers created by innovation (Ram & Sheth, 1989). Our target respondents are generation X aged from 35-55. Their habit of purchasing goods and services through physical merchandise are hard to change. There is a high possibility that it is not socially acceptable for this generation to conduct transaction through mobile device (Ram & Sheth, 1989). TB will also occur due to the preference of customers to shop with the assistance provided by sales staff rather than shopping online (Lian & Yen, 2013).

5.2.5 Image Barrier

This variable satisfies the condition of p-value greater than 0.05 which is 0.0011. Thus, a significant negative relationship between IB and AI of m-commerce is recognized.

The outcome of research conducted by Elbadrawy and Aziz (2012), Kleijnen et al. (2009) and Luakkanen et al. (2007) have achieve the same outcomes as ours which state that IB is one of the factor that causes rejection of adoption of technology or innovation by users. IB implies that a negative impression is created due to the perception of complication of the use of product (Elbadrawy, 2012). The result of our study indicates that most of the generations X in Selangor and Negeri Sembilan are facing difficulties in using the mobile device to conduct transactions. According to Lian et al. (2012) IB exists when customers have bad experience and impression in using online services previously.

5.2.6 Perceived Cost Barrier

PCB is not supported in our study due to its p-value of 0.7427. It has not fulfilled the requirement of p-value < 0.05 which signifies PCB has no significant relationship with AI of m-commerce. This is inconsistent with past studies carried out by Yu (2012), Lu et al. (2011) and Sripalawat et al. (2011) which declare that PCB is a factor that hinders users' mobile services adoption.

However, our research is aligned with the research by Ramlugun and Issuree (2014) which indicated that PCB has no influence on the intention to adopt mobile related services. One of the possible reasons to explain this is the cost

of adoption of mobile commerce is at low cost (Ramlugun & Issuree, 2014). Moreover, majority of our target respondents are aged from 50-55. Most of them have savings and financial ability. Therefore, PCB is not a significant barrier for them to adopt m-commerce. Our findings are also supported by Yang, Lu, Gupta, Cao, and Zhang (2012) which states that the cost to adopt m-commerce are reduced as compare to early stage and it would not be a primary consideration for consumers as they can evaluate more clearly other positive perception.

Moreover, the corporate can manage and control their expenses on mobile services as the cost is only a small portion out of their earnings (Lu, Yang, Chau, & Cao, 2011). Yu (2012) also states that perceived cost are irrelevant to those who aged above 50. The majority of our target respondents are within the range of 50-55.

5.3 Implication of the study

5.3.1 Practical Implication

This study is beneficial and significant to those business practitioners that carry out their daily business transaction through online via mobile device as this research presented a clear vision on factors that affect consumers' adoption intention to use M-commerce to carry out daily business transaction.

Meanwhile, most of the past studies were just concerned to the reasons that influence consumers' behavioral intention to adopt M-commerce in foreign countries. This study is carried out to study how Generation X in Malaysia intend to use M-commerce as affected by UB, VB, RB, TB, IB and PCB. The information and result gathered during this study offer a clearer understanding

on those barriers that affected M-commerce adoption in Malaysia especially for Generation X. By this, it enables any future researchers that wish to conduct their studies regarding this area have a basic idea and served as a guideline for them and Malaysia citizens as it clearly lists out barriers that influence consumers' behavioral intention to use M-commerce.

Based on data generated from research, the values of R^2 of all six factors have a value of 0.8490. This indicates that all the 6 barriers could significantly account 84.9% of the variation in AI. Hereby, it can be assumed that the remaining deviations are cause by other variables that were not included in this research. For any future studies, this study enable all future researchers understand more on the factors that affect AI toward M-commerce. With this paper, they will have an idea on which factors should be consider or take more effort by including more factors that may affect the AI.

As shown in the result part, UB, VB, RB, TB and IB have significant influence toward the adoption intention of M-commerce among these barriers. Majority of the respondents commended that TB significantly influence their intention to adopt M-commerce. M-commerce is not easy to use as it required some procedures before confirming any transaction and create inconveniency due to the network coverage in Malaysia. By referring this study, technology developers can have an idea on trying to simplify the procedure for any transaction or providing quick tutorial for the whole transaction and including more language options for all users to overcome the barriers of AI toward M-commerce in Malaysia.

According to the result, TB is perceived to have the greatest impact that influences the AI of M-commerce. TB occurs when an innovation in technology field poses a change in customers' established tradition (Ram & Sheth, 1989). This barrier occurred because users prefer to use their original methods or steps for any transactions and refuse to try using mobile device to

carry out the transaction. Hence, this study enables technology developers to know which barrier affect the most on MC adoption in Malaysia which in turn allow problem solving to minimize the TB toward M-commerce.

In contrast, PCB are insignificant in explaining the intention to use M-commerce among generation X in Malaysia. So this factor should no longer be taking into account for any other future researchers who conduct related studies and technology developers who try to improve users' adoption intention toward M-commerce.

5.3.2 Theoretical Implication

Theoretically, this research figures out how important is the Innovation Resistance Theory (IRT) explaining the barriers against M-commerce adoption among Generation X in Malaysia. The proposed conceptual framework centralized on how the six barriers which are usage, value, risk, tradition, image and perceived cost affect M-commerce adoption. Apparently, IRT is the one of the potential and effective theory employed to understand the barriers against M-commerce adoption among Generation X in Malaysia. In conclusion, IRT is one of the most suitable theories that can be considered by any future researcher that conduct research related to technological innovation,

5.4 Limitation and Recommendations

This research has addressed several limitations. Firstly, questionnaire survey is used in this research to collect the information due to its cost efficiency. However, questionnaire survey is not a good way as it is time-consuming to collect back those questionnaires and possibly unable to collect back the exact amount of questionnaires that were distributed. In order to get more accurate and reliable information, a Face-to-Face interview should be conducted. This method has a characteristic of synchronous communication in time and place. It allows interviewers to take advantage of social or nonverbal cues to gain additional information from the interview (Emans, 1986). Besides, it enable the interviewee respond instantly and ensure the answer responded by interviewees are more spontaneous as no time delay between the question and answer,.

In addition, a cross-sectional study was used to focus on the barriers to Mobile Commerce adoption among generation X in Malaysia only for a certain period. It only occurred and focused on a phenomenon during a particular time (Saunders et al., 2009). It can be irrelevant in the future as those information obtained only reflect current situation in Malaysia. The finding may get outdated as the time pass. Longitudinal approach is highly recommended as researchers can look at a longer period of time instead of just focusing a particular time frame. Information regarding individuals' change can be provided in more detailed by longitudinal data (Hedeker & Gibbons, 2006).

Besides, the target respondents in this research are generation X especially from Selangor (Kuala Lumpur) and Negeri Sembilan. These two states are been chosen due to their highest number of mobile phone users among Malaysia based on Department of Statistics Malaysia in 2013. It is recommended to include other states instead of just focusing on few states. This is because different states will have different

respondents whereby different responses will be collected with different results generated.

5.5 Conclusion

In brief, this study provides solution to all research question and objectives are also fulfilled. The relationships between variables are statistically significant. The findings obtained in this study indicate that UB, VB, RB, TB and IB have significantly influence to the MC adoption. However, PCB does not have an influence on the MC adoption. This study also concludes that TB is perceived to have the greatest impact to influence the adoption intention of MC among those barriers.

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APPENDICES

Appendix 2.1: Summary of Past Empirical Studies

Study	Country	Data	Major Findings
Rahman, 2013	Bangladesh	Interviews on 27 stakeholders of m-commerce.	Lack of literacy found out to be major barrier in m-commerce adoption
Mahatanankoon & Vila-Ruiz, 2007	USA	Web-based survey of 215 university students.	Device inefficiency is the most important factor that has effect on m-commerce adoption.
Bouwman, Carlsson, Molina-Castillo & Walden, 2007	Finland	Wed-based questionnaire on 484 consumers.	Cognitive barrier negatively affect mobile service usage.
Luo, Li, Zhang & Shim (2010)	USA	Survey of 180 undergraduate students enrolled in general business core courses.	Negative relationship between risk perception at the individual level and acceptance of emerging innovative technologies
Brown, Cajee, Douglas Davies & Stroebel (2003)	South Africa	Questionnaires survey on 162 mobile banking users.	Perceived risk affecting M-commerce adoption negatively
Joubert & Belle (2009)	South Africa	Quantitative survey of 110 on 'early adopters' of mobile service.	Risk barrier exerts a significant (negative) influence on intention to participate in M-commerce
Molesworth & Suortti (2001)	England	Individual semi-structured interviews on 8 university students and staffs.	There is a negative relationship between tradition barriers and innovation resistance among consumers in online high-cost purchase
Lian & Yen (2013)	Taiwan	Questionnaires survey on 178 SME	There is a negative relationship or direct

		from cosmetic industry.	influence of tradition barrier on M-shopping intention
Gutner (2014)	Germany	Questionnaires survey on 752 which are Smartphone users.	tradition barrier has a negative impact on the adoption intention toward mobile applications
Elbadrawy & Aziz (2012)	Egypt	Self-administered questionnaires collected from Alexandria and Cairo's consumers	Image barrier is the weakest barrier to the mobile banking adoption among the postponers, opponents and rejectors.
Kuisma, Laukkanen, & Hiltunen (2007)	Finland	An interview with 30 subjects which were Finnish bank customers	Perceived image barrier has a negative relationship with the adoption of innovation.
Lian, Liu & Liu (2007)	Taiwan	Questionnaires survey on 178 college students who majored in IS related departments	Image barrier is the critical factors for user refused to shop online.
Yu (2012)	Taiwan	Structured questionnaires survey of 441 respondents in major downtown areas of Taiwan	Perceived cost barrier is the second most important factor in affecting people intention to adopt mobile banking.
Lu, Yang, Chau, & Cao (2011)	China	web-based survey of 961 users from Alipay that provides mobile payment services	Perceived cost barrier is still a concern that suppresses students' intention to use the mobile payment services but had little significant impact to workers.
Sripalawat, Thongmak, & Ngramyarn (2011)	Thailand	Questionnaires survey of 195 from bank customers and mobile users in the Bangkok metropolitan area	Perceived cost barrier is the thirdly obstructive factor that hindered the consumer from adopting m-banking services.
Kleijnen, Lee, & Wetzels (2009)	Netherlands	A focus-group study with 58 subjects which were approached on the streets of the central	Drivers of consumer resistance have a negative relationship with adoption intention of innovation

		shopping.	
Laukkanen, Sinkonen, Kivijarvi & Laukanen (2007)	Finland	Online questionnaires survey of 1,151 Scandinavian bank's online service users	The adoption intention of MC is negatively affected by functional and psychological barriers
Peng, Xu & Liu (2011)	China	Questionnaires survey of 186 junior and senior students in a provincial university	Perceived risk and cost will gave a negative impact to adoption intention of MC
Yu & Li (2015)	Thailand and Taiwan	Online questionnaire of 1,861 mobile commerce users	IRT barriers have negative relationship with adoption intention of MC.
Laukkanen & Kiviniemi (2010)	Finland	Survey questionnaire of 1,551 bank customers	IRT barriers are negatively affect the adoption intention to mobile banking
Suki (2011)	Malaysia	Survey questionnaire of 100 mobile users	Barriers of usage will have negative relationship with the adoption intention
Soliman & Salem (2014)	Saudi	Self-administered questionnaire on 378 university students	Barriers of ease of use will cause a negative relationship toward adoption intention.
Sun, Cao & You (2010)	China	Online questionnaire of 228 mobile service users	Barrier of value will show negative relationship with intention to adopt mobile service.
Kazi (2013)	Pakistan	Self-administered questionnaire of 220 university students	Perceived usefulness is positively related to adoption intention of internet banking service.
Maity (2014)	Thailand, India, Bangladesh, Sri Lanka and Pakistan	Questionnaire survey of 9,066 mobile service users.	A barrier in perceived usefulness will have negative relationship with adoption intention
Shin (2009)	Korea	Web-based questionnaire of 296 university students.	There is a significant influence between users' perceived security and the

			intention to use mobile wallet.
Munusamy, Annamalah, & Chelliah (2012)	Malaysia	Questionnaire survey with retail banking customers	There is a negative relationship between perceived risk and internet banking usage among Malaysian
Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva (2014)	Spain	Online survey of 2,012 internet users	There is a negative relationship between perceived risk and adoption intention
Elbadrawy, Aziz, & Hamza (2012)	Egypt	Survey questionnaire of 229 bank customers	There is a significant relationship between tradition barrier and m-banking adoption
Dasgupta, Paul, &Fuloria (2011)	India	Survey questionnaire of 325 bank customers	Tradition barrier have a significant influence on the behavioral intention towards m-banking.
Rammile & Nel (2012)	South Africa	Survey questionnaire of 288 non-users of mobile baking	Image barrier has negative relationship with the intention to use mobile banking
Bakhit (2014)	North Lebanon	Survey questionnaire of 50 household	Image barrier has a moderate effect to innovation resistance.
Pham & Ho (2015)	Taiwan	Web-based survey of 402 online consumers	PCB has an adverse effect towards the mobile payment adoption
Luarn and Lin(2005)	Taiwan	Survey questionnaire of 180 traditional branch-based banking users	Perceived cost barrier has negatively influence the intention to use mobile banking in Taiwan
Chong (2013)	China	Survey questionnaire of 410 mobile commerce users	Perceived cost barrier has a negative impact to the continuance intention to adopt MC.
Aslam, Khan, Tanveer, and Amber (2011)	Pakistan	Structured questionnaires with 520 respondents	Low perceived value negatively affect AI of internet banking.

		from 10 banks	
Antioco and Kleijnen (2010)	Netherlands	Survey questionnaires on 229 master students.	Lack of value negatively affects technological innovations adoption.
Agwu (2013)	United Kingdom	Survey questionnaires from 630 individuals.	Value barrier negatively influence internet banking adoption.

Appendix 3.1: Definitions and Sources of Variables

Variables	Definition	Sources
Usage barrier	Resistance towards a new invention due to the inconsistence with current routine, exercise, and plan.	Barati and Mohammadi, 2009
Value barrier	Resistance towards usage of products or services when they do not fulfill user's perception of performance-to-price value in contrast with other substitutes.	Rammile and Nel, 2012
Risk barrier	Uncertainty regarding possible negative consequences of using a product or service.	Marett, Pearson, Pearson, and Bergiel, 2015
Tradition barrier	Obstacles originate when a technology innovation poses a change in customer's established tradition.	Mohtar, Abbas, and Baig, 2015
Image barrier	Negative thoughts of individuals toward technology tools and perceived complication of use.	Claudy, 2011
Perceived cost barrier	Additional expenses that incurred in transferring from wired internet payment services to ubiquitous mobile payment options	Lu, Yang, Chau, and Cao, 2011
Adoption intention	Consequences of the sum of the variables that culminate into an intention that demonstrates that the consumer is willing to perform certain actions	Joubert and Belle, 2013

Variables	Items	Descriptions	Sources
Usage Barrier	UB1	I find that mobile commerce services are difficult to use.	Adapted from Laukkanen, Sinkkonen, Kivijarvi, and Laukkanen (2007)
	UB2	I find that mobile commerce services are inconvenient to use	
	UB3	I find that mobile commerce services are slow to use.	
	UB4	I find that progress in mobile commerce services is unclear.	
Value Barrier	VB1	Using mobile commerce services is uneconomical.	Adapted from Laukkanen, Sinkkonen, Kivijarvi, and Laukkanen (2007)
	VB2	Using mobile commerce services does not offer any advantage when compared to other ways of handling financial matters.	
	VB3	Using mobile commerce services do not increase the ability to control financial matters.	
	VB4	Using mobile commerce services is not a good substitute of a PC to conduct transactions.	Adapted from Elbadrawy and Aziz (2011)
	VB5	Using mobile commerce services do not eliminate the constraints of time and space when conducting transactions.	
Risk Barrier	RB1	I am afraid for making mistakes in the process of using mobile commerce.	Adapted from Laukkanen, Sinkkonen, Kivijarvi, and Laukkanen (2007)
	RB2	I am afraid of entering wrong information in the mobile commerce process.	
	RB3	I am afraid for faultiness in the function of mobile commerce.	Adapted from Peng, Xu, and Liu (2011)
	RB4	I am afraid for exposure of privacy if using mobile commerce.	
	RB5	I am afraid for unreasonable or fraudulent charges if using mobile commerce.	
Tradition Barrier	TB1	I feel impatient with my m-commerce applications.	Adapted
	TB2	I prefers to physical forms of payments.	

	TB3	I prefer to engage in face-to-face interaction when buying products or services.	from Mahatanankoon and Ruiz (2007)
	TB4	I prefer to buy products or services through computers.	
Image Barrier	IB1	Mobile commerce services projected a very negative image.	Adapted from Laukkanen, Sinkkonen, Kivijarvi, and Laukkanen (2007)
	IB2	New technology is often too complicated to use.	
	IB3	Mobile commerce services are perceived to be difficult to use.	
Perceived Cost Barrier	PCB1	I would be charged more to use m-commerce.	Adapted from Spripalawat, Thongmak, and Ngramyarn (2011)
	PCB2	Network connection fees for m-commerce are expensive.	
	PCB3	Extra services charged for m-commerce is expensive.	
	PCB4	M-commerce expenses are burdens for me.	
	PCB5	Total costs to perform transactions via mobile phone are more expensive than via other channels.	
Adoption Intention	AI1	I intend to use mobile commerce.	Adapted from Lian and Yen (2013)
	AI2	I intend to use mobile commerce in the future.	
	AI3	I intend to use mobile commerce in order to increase the convenience.	
	AI4	I intend to learn how to use mobile commerce.	Adapted from Peng, Xu and Liu (2011)
	AI5	I intend to use mobile commerce more often.	
	AI6	I intend to recommend mobile commerce to my friends	

Source: Developed for the research

Appendix 3.2: Survey Questionnaires

Barriers of Mobile Commerce Adoption among Generation X in Malaysia

Survey Questionnaire

The purpose of this survey is to conduct a research to investigate the relationship between types of barriers and adoption intention among generation X in Malaysia. Please answer all questions correctly. All responses are completely confidential.

Thanks you for your participation.

Instructions:

1) There are THREE (3) sections in this questionnaire. Please answer ALL questions in ALL sections.
2) Completion of this form will take you less than 5 minutes.
3) The contents of this questionnaire will be kept strictly confidential.

Section A: Demographic Profile

In this section, we would like you to fill in some of your personal details. Please tick your answer and your answers will be kept strictly confidential.

QA 1: Gender:
□ Female
□ Male

QA 2: Age:
□ 35-39
□ 40-44
□ 45-49
□ 50-55

QA 3: Marital status:
□ Single
□ Married

QA 4: Highest education completed:
□ High School
□ Diploma
□ Degree
□ Master and above

QA 5: Race:
□ Malay
□ Chinese
□ Indian

QA 6: Income Level:
□ RM 1,000 or below
□ RM 1,001 – RM 3,000
□ RM 3,001 – RM 5,000
□ Above RM 5,000

QA 7: Mobile commerce:
□ User
□ Non-user

Section B: Types of Barriers

This section is seeking your opinion regarding the importance of different types of barriers. Respondents are asked to indicate the extent to which they agreed or disagreed with each statement using 5 Likert scale [(1) = strongly agree; (2) = agree; (3) = neutral; (4) = disagree and (5) = strongly disagree] response framework. Please circle one number per line to indicate the extent to which you agree or disagree with the following statements.

No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
UB	Usage Barrier					
UB1	In my opinion, mobile commerce services are difficult to use.	1	2	3	4	5
UB2	In my opinion, mobile commerce services are inconvenient to use	1	2	3	4	5
UB3	In my opinion, mobile commerce services are slow to use.	1	2	3	4	5
UB4	In my opinion, progress in mobile commerce services is unclear.	1	2	3	4	5
No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
VB	Value Barrier					
VB1	Using mobile commerce services is uneconomical.	1	2	3	4	5
VB2	Using mobile commerce services does not offer any advantage when compared to other ways of handling financial matters.	1	2	3	4	5
VB3	Using mobile commerce services do not increase the ability to control financial matters.	1	2	3	4	5
VB4	Using mobile commerce services is not a good substitute of a PC to conduct transactions.	1	2	3	4	5
VB5	Using mobile commerce services do not eliminate the constraints of time and space when	1	2	3	4	5

	conducting transactions.					
No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
RB	Risk Barrier					
RB1	I am afraid for making mistakes in the process of using mobile commerce.	1	2	3	4	5
RB2	I am afraid of entering wrong information in the mobile commerce process.	1	2	3	4	5
RB3	I am afraid for faultiness in the function of mobile commerce.	1	2	3	4	5
RB4	I am afraid for exposure of privacy if using mobile commerce.	1	2	3	4	5
RB5	I am afraid for unreasonable or fraudulent charges if using mobile commerce.	1	2	3	4	5
No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
TB	Tradition Barrier					
TB1	I feel impatient with my m-commerce applications.	1	2	3	4	5
TB2	I prefers to physical forms of payments.	1	2	3	4	5
TB3	I prefer to engage in face-to-face interaction when buying products or services.	1	2	3	4	5
TB4	I prefer to buy products or services through computers.	1	2	3	4	5
No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
IB	Image Barrier					
IB1	Mobile commerce services projected a very negative image.	1	2	3	4	5

IB2	New technology is often too complicated to use.	1	2	3	4	5
IB3	Mobile commerce services are perceived to be difficult to use.	1	2	3	4	5
No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
PCB	Perceived Cost Barrier					
PCB1	I would be charged more to use m-commerce.	1	2	3	4	5
PCB2	Network connection fees for m-commerce are expensive.	1	2	3	4	5
PCB3	Extra services charged for m-commerce is expensive.	1	2	3	4	5
PCB4	M-commerce expenses are burdens for me.	1	2	3	4	5
PCB5	Total costs to perform transactions via mobile phone are more expensive than via other channels.	1	2	3	4	5

Section C: Adoption Intention

This section is seeking your opinion regarding the impacts of adoption intention of mobile commerce with the types of barriers given. Respondents are asked to indicate the extent to which they agreed or disagreed with each statement using 5 Likert scale [(1) = strongly agree; (2) = agree; (3) = neutral; (4) = disagree and (5) = strongly disagree] response framework. Please circle one number per line to indicate the extent to which you agree or disagree with the following statements.

No	Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
AI	Adoption Intention					
AI1	I intend to use mobile commerce.	1	2	3	4	5
AI2	I intend to use mobile commerce in the future.	1	2	3	4	5
AI3	I intend to use mobile commerce in order to increase the convenience.	1	2	3	4	5
AI4	I intend to learn how to use mobile commerce.	1	2	3	4	5
AI5	I intend to use mobile commerce more often.	1	2	3	4	5
AI6	I intend to recommend mobile commerce to my friends.	1	2	3	4	5

Appendix 3.3: Permission Letter to Conduct Survey

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

10th April 2015

To Whom It May Concern

Dear Sir/Madam

Permission to Conduct Survey

This is to confirm that the following students are currently pursuing their *Bachelor of Commerce (HONS) Accounting* program at the Faculty of Business and Finance, Universiti Tunku Abdul Rahman (UTAR) Perak Campus.

I would be most grateful if you could assist them by allowing them to conduct their research at your institution. All information collected will be kept confidential and used only for academic purposes.

The students are as follows:

Name of Student	Student ID
Yeong Weng Fatt	12ABB00849
Elaine Chong Ket Yin	13ABB00558
Chan Mun Yee	12ABB00835
Kwa Sin Yee	12ABB00575
Lee Kok Wei	12ABB01073

If you need further verification, please do not hesitate to contact me.

Thank you.

Yours sincerely

Puan Zam Zuriyati Binti Mohamad
Head of Department,
Faculty of Business and Finance
Email: zuriyati@utar.edu.my

Dr Krishna Moorthy Manicka Nadar
Supervisor,
Faculty of Business and Finance
Email: krishnam@utar.edu.my

Address: 9, Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor Darul Ehsan, Malaysia **Postal Address:** P O Box 11384, 50744 Kuala Lumpur, Malaysia
Tel: (603)7958 2628 **Fax:** (603) 7956 1923 **Homepage:** http://www.utar.edu.my