

THE MODERATORS AFFECT ON THE USAGE OF  
MOBILE BANKING IN MALAYSIA

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THE MODERATORS AFFECT ON THE USAGE OF  
MOBILE BANKING IN MALAYSIA

BY

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requirement for the degree of

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Lastly, I would also like to express my appreciation to friends and family for their support and care throughout this critical period. They have been my listeners and my emotional supporters, as I feel very stressed and panic when I am not able to complete some work.

## **DEDICATION**

This study report will be dedicated to my supervisor, Dr. Seah Choon Sen, as a token of appreciation, as he has helped me every step of the way on my final-year project journey. His valuable insight motivated me.

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## TABLE OF CONTENTS

	<b>Pages</b>
<b>Copyright @ 2023</b> .....	<b>II</b>
<b>DECLARATION</b> .....	<b>III</b>
<b>ACKNOWLEDGMENT</b> .....	<b>IV</b>
<b>DEDICATION</b> .....	<b>V</b>
<b>TABLE OF CONTENTS</b> .....	<b>VI</b>
<b>LIST OF TABLES</b> .....	<b>X</b>
<b>LIST OF FIGURES</b> .....	<b>XII</b>
<b>LIST OF ABBREVIATIONS</b> .....	<b>XIII</b>
<b>PERFACE</b> .....	<b>XIV</b>
<b>ABSTRACT</b> .....	<b>XV</b>
<b>Chapter 1: Research Overview</b> .....	<b>1</b>
1.1 Introduction .....	1
1.2 Background of study .....	1
1.3 Problem statement.....	2
1.4 Research question.....	4
1.5 Research objective.....	4
1.6 Scope of study .....	5
1.7 Significance of Study .....	5
1.8 Chapter Summary.....	6
<b>Chapter 2: Literetual Review</b> .....	<b>7</b>
2.1 Introduction .....	7
2.2 Underlying Theory .....	7
2.2.1 UTAUT 2 model.....	7
2.3 Review of variables.....	9
2.3.1 Usage of Mobile banking (MBU).....	9
2.3.2 Facilitating condition (FC) .....	10
2.3.3 Perceived Risk (PR).....	10

2.3.4 Habit (H).....	11
2.3.5 Interface design Quality (IDQ).....	11
2.3.6 Gender .....	12
2.3.7 Education level .....	12
2.3.8 Income .....	12
2.4 Hypothesis Development .....	13
2.4.1 Facilitating Condition (FC) .....	13
2.4.2 Perceived Risk (PR).....	14
2.4.3 Habit (H).....	14
2.4.4 Interface design quality (IDQ).....	14
2.4.5 Gender .....	15
2.4.6 Education Level.....	15
2.4.7 Income .....	16
2.5 Proposed Research Framework.....	17
2.6 Chapter summary .....	17
<b>Chapter 3: Methodology.....</b>	<b>18</b>
3.1 Introduction .....	18
3.2 Secondary Data .....	18
3.2.1 Accessing secondary data.....	18
3.2.2 Process of analysing secondary data .....	19
3.2.3 Metadata of dataset.....	19
3.3 Sources of secondary data.....	20
3.4 Sampling Design .....	21
3.4.1 Target Population .....	21
3.4.2 Sampling frame and location.....	21
3.4.3 Sampling technique .....	21
3.4.4 Sampling Size.....	22
3.5 Data Processing.....	22
3.6 Proposed Data Analysis Tool.....	22



3.6.1 Descriptive Analysis.....	23
3.6.2 Inferential analysis.....	23
3.7 Chapter summary .....	24
<b>Chapter 4: Result and Finding .....</b>	<b>25</b>
4.1 Introduction .....	25
4.2 Data Screening .....	25
4.3 Descriptive analysis.....	26
4.3.1 Gender .....	26
4.3.2 Education Level.....	27
4.3.3 Income .....	28
4.4 Inferential analysis .....	29
4.4.1 Pearson correlation analysis .....	29
4.4.2 Multiple Regression Analysis.....	30
4.5 Hypothesis Testing.....	50
4.5.1 Facilitating condition (FC) .....	51
4.5.2 Perceived Risk (PR).....	52
4.5.3 Habit (H).....	52
4.5.4 Interface design quality (IDQ).....	52
4.5.5 Moderation effect of gender between facilitating condition and mobile banking usage .....	53
4.5.6 Moderation effect of gender between perceived risk and mobile banking usage .....	53
4.5.7 Moderation effect of gender between habit and mobile banking usage .....	54
4.5.8 Moderation effect of gender between interface design quality and mobile banking usage .....	54
4.5.9 Moderation effect of education level between facilitating condition and mobile banking usage .....	55
4.5.10 Moderation effect of education level between perceived risk and mobile banking usage .....	55

4.5.11 Moderation effect of education level between habit and mobile banking usage .....	56
4.5.12 Moderation effect of education level between interface design quality and mobile banking usage .....	56
4.5.13 Moderation effect of income between facilitating condition and mobile banking usage .....	57
4.5.14 Moderation effect of income between perceived risk and mobile banking usage .....	57
4.5.15 Moderation effect of income between habit and mobile banking usage .....	58
4.5.16 Moderation effect of income between interface design quality and mobile banking usage .....	58
4.6 Chapter summary .....	59
<b>Chapter 5: Discussion .....</b>	<b>60</b>
5.1 Introduction .....	60
5.2 Discussion on 1 <sup>st</sup> objective .....	60
5.3 Discussion on 2 <sup>nd</sup> objective .....	61
5.4 Implication .....	62
5.4.1 Theoretical implication .....	62
5.4.2 Managerial Implication.....	63
5.5 Limitation .....	64
5.6 Recommendation.....	65
5.7 Chapter Summary.....	66
<b>Reference .....</b>	<b>67</b>

## LIST OF TABLES

	Pages
Table 3.1: Rules of thumb about Correlation.....	24
Table 4.1 The gender of respondents .....	26
Table 4.2: Education Level of respondents.....	27
Table 4.3: Income Level .....	28
Table 4.4: Pearson correlation Matric.....	29
Table 4.5: Model Summary .....	30
Table 4.6: ANOVA <sup>factors</sup> .....	30
Table 4.7: Coefficients <sup>factors</sup> .....	31
Table 4.8: Model Summary for gender moderation on facilitating condition .....	31
Table 4.9 ANOVA <sup>a</sup> – Gender Vs FC .....	32
Table 4.10: Coefficients <sup>a</sup> – Gender Vs FC .....	32
Table 4.11: Model Summary for gender moderation on perceived risk .....	33
Table 4.12: ANOVA <sup>a</sup> – Gender Vs PR.....	33
Table 4.13: Coefficients <sup>a</sup> – Gender Vs PR .....	34
Table 4.14: Model Summary for gender moderation on habit.....	34
Table 4.15: ANOVA <sup>a</sup> – Gender Vs H.....	35
Table 4.16: Coefficients <sup>a</sup> – Gender Vs H .....	35
Table 4.17: Model Summary for gender moderation on interface design quality .....	36
Table 4.18: ANOVA <sup>a</sup> – Gender Vs IDQ.....	36
Table 4.19: Coefficients <sup>a</sup> – Gender Vs IDQ .....	37
Table 4.20: Model Summary for education level moderation on facilitating condition .....	38
Table 4.21: ANOVA <sup>a</sup> –Education level Vs FC .....	38
Table 4.22: Coefficientsa– Education level Vs FC.....	39
Table 4.23: Model Summary for education level moderation on perceived risk...39	
Table 4.24: ANOVAa– Education level Vs PR.....	40
Table 4.25: Coefficientsa– Education level Vs PR.....	40
Table 4.26: Model Summary for education level moderation on habit .....	41
Table 4.27: ANOVAa – Education level vsH.....	41
Table 4.28: Coefficientsa– Education level VsH.....	42

Table 4.29: Model Summary for education level moderation on interface design quality .....	42
Table 4.30: ANOVA <sup>a</sup> – Education level Vs IDQ.....	43
Table 4.31: Coefficients <sup>a</sup> – Education level Vs IDQ .....	43
Table 4.32: Model Summary for income moderation on facilitating condition ....	44
Table 4.33: ANOVA <sup>a</sup> –Income Vs FC.....	44
Table 4.34: Coefficients <sup>a</sup> –Income Vs FC.....	45
Table 4.35: Model Summary for income moderation on perceived risk .....	45
Table 4.36: ANOVA <sup>a</sup> –Income Vs PR.....	46
Table 4.37: Coefficients <sup>a</sup> –Income Vs PR.....	46
Table 4.38: Model Summary for income moderation on habit.....	47
Table 4.39: ANOVA <sup>a</sup> –Income Vs H.....	47
Table 4.40: Coefficients <sup>a</sup> –Income Vs H.....	48
Table 4.41: Model Summary for income moderation on interface design quality	48
Table 4.42: ANOVA <sup>a</sup> –Income Vs IDQ .....	49
Table 4.43: Coefficients <sup>a</sup> –Income Vs IDQ .....	49
Table 4.44: Hypothesis table.....	50

## LIST OF FIGURES

	Pages
Figure 2.1: UTAUT2 Model.....	8
Figure 2.2: Proposed Research Framework.....	17
Figure 4.1: The gender of respondents.....	26
Figure 4.2: Education Level.....	27
Figure 4.3: Income.....	28

## **LIST OF ABBREVIATIONS**

EL	Education level
FC	Facilitating condition
G	Gender
H	Habit
I	Income
IDQ	Interface design quality
MBU	Mobile banking usage
PR	Perceived risk
SPSS	Statistical Package for Social Sciences
UTUAT2	Unified Theory of Acceptance and Use of Technology 2

## **PERFACE**

According to the requirements of the University Tunku Abdul Rahman (UTAR) for the award of certificates for the Bachelor of International Business (Honours), it is a pre-condition that every student undertakes the final year project, 'UKMZ2016 Research Project'. There are plenty of research topics that can be conducted by the student of international business, as the course for this programme includes a very wide range. As for this study, the author's final year project title is "The Moderators Affect on Usage of Mobile Banking in Malaysia". This is due to the fact that the author has noticed that the number of users of mobile banking and banking transactions is increasing in Malaysia. Despite increasing usage, there are still certain factors that will affect the public's trust in mobile banking in Malaysia in the long term. In addition, it is found that individuals from different demographic backgrounds have different concerns about the factors that will affect their usage of mobile banking.

## **ABSTRACT**

Mobile banking is an online platform that provides the public with the opportunity to carry out daily banking and commercial transactions through a mobile application. In Malaysia, mobile banking users and transactions are increasing at a steady rate year by year. However, there are still some factors that hinder the public from adopting and using mobile banking applications. The factors are usually affected by the demographic background of the users. Due to this issue, the Unified Theory of Acceptance and Use of Technology (UTAUT) 2 model is useful in examining the factors influencing users' technology acceptance. However, modification of the model is required to further examine how demographic backgrounds as moderators can affect the usage of mobile banking in Malaysia. Taking account of this context, the objective of this study is to determine the factors that affect the usage of mobile banking in Malaysia. In addition, this study also aims to determine the most significant factors that affect the usage of mobile banking in Malaysia. Not only that, but this study also aims to examine the moderator's effect between the factors and the usage of mobile banking in Malaysia. In this study, the UTAUT2 model has been modified by removing some variables and adding some moderators to alter the relationship between the dependent variable and the independent variable. From the perspective of methodology, secondary data will be utilised. The dataset was collected by the previous researchers using non-probability sampling, and the previous researchers have successfully collected responses from 504 respondents. The findings indicated that facilitating conditions, perceived risk, habit, and interface design quality will affect the usage of mobile banking in Malaysia. Among all these factors, the most significant factor is interface design quality, which affects the usage of mobile banking in Malaysia. The findings also revealed that the three moderators selected can moderate the relationship between facilitating condition, perceived risk, habit, interface design quality, and mobile banking usage.



## **Chapter 1: Research Overview**

### **1.1 Introduction**

This chapter will detailed out all the basic information of the overall study which includes the research's background, research question and objectives and finally the significant of research.

### **1.2 Background of study**

The service industry is one of the most important and vital industries in most of the countries worldwide, as it contributes to the growth of both society and the economy of a country. (Bala et al., 2021). The banking industry is also included in the service sector when it provides several services like loan services, cheque payments, foreign currency exchange, and more for the people. Thus, the effectiveness of the banking system in a country is a very important indicator that determines the level of economic development in that country. (Bala et al., 2021). As we can see, most of the business sectors are undergoing rapid change. Thus, due to the rapid shifting of technology in other industries, the banking industry is forced to understand the importance of being more modern and digitalized. Not only digitalizing, but a bank is also urged to provide more services along with their digitalization. (Souiden et al., 2020). Ministry of Finance Malaysia has issued digital banking license to five financial institutions in Malaysia (Bank Negara Malaysia, 2022). Mobile banking is a new kind of banking method that is invented due to digitalization. Comparing with traditional banking, all services are preferred to serve physically at the bank counter. Mobile banking has become more appealing and convenient due to the accessibility. Mobile banking is an online platform which provide bank opportunity to carry out daily banking and commercial transaction through mobile application (Rehman et al., 2019). In addition, it is also a mean for

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

the customers to manage their banking transaction and financial activities by using digital gadget like smartphone and tablet (Rehman et al., 2019). In Malaysia, due to all the digitalization and rapid development of technology especially in communication field, the banking sector start to improve where Malaysian also start to adopt mobile banking. As of Malaysia Central bank, the mobile banking users in Malaysia has grown dramatically from 7.3 million users in the year of 2015 to 12.7 million users in the year of 2018. (Foroughi et al., 2019). Apart from increasing number of users, the total amount of monetary value and the banking transactions using mobile application have also increased significantly from 2017 to 2018. (Foroughi et al.,2019). Although mobile banking users have increase but the mobile applications are not fully interacting and could not cope with the needs of the public yet. (Tarawneh, 2021). Thus, banking services provider shall study more about the consumer behaviour pattern. Different age group, race, as well as demographic of consumer bring along with different behaviour. Hence, this study is focused on the moderator affect towards the usage of mobile banking.

Moderators are the variables that changes the relationship between independent variable and dependant variable. (Roe, 2012). Moderators are applied by the researcher by adding several variables besides dependent and independent variables and are used to examine the strength of the relationship between dependent and independent variables. (Mackinnon,2011). Some of the reasons to use moderators in research are to understand how complicated behaviour may be, to test the current theory, to examine the particular effect of a certain group for a study, and others. (Mackinnon,2011). Moderators that will be apply in this research is gender, educational level and income.

### **1.3 Problem statement**

In this 21<sup>st</sup> century, technology is undergoing rapid development which lead to the invention of the smartphone. Smartphones have also undergone multiple revolutions that attract the interest of people, especially young adult users who like to use new technology like a smartphone. The invention of the smartphone has led to a great change in a lot of industries, which includes the banking industry. Mobile banking is the latest way for people to carry out banking transactions due to the

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

invention of the mobile phone. The number of users and transactions that are carried out through mobile banking is increasing from year to year. Although the number of users and transactions through mobile banking is increasing, there are still challenges faced by the bank in encouraging people to adopt mobile banking.

The trust issue that arises from the banking customer toward the application developed by a banking service provider is one of the main challenges that the bank is facing. Most banking customers do not trust mobile banking as they think there will be risks associated with the use of mobile banking. In most cases, the risk of using mobile banking will be related to security and privacy and also delay in transaction. Thus, if there is an increase in the perceived risk of using mobile banking, the trust of customers will also be affected as safety and confidence are highly related to perceived risk. The risks of losing data, illegal access, wrongly use of bank account are the potential risks that need to be accepted by banking customers before they start to use mobile banking. Difference in education level have different opinion towards the risk as male are maybe more worried on the safety of the money while female is believing in the bank (Sihatong & Murdiawati, 2022). According to Raj (2022), mobile banking in facing great cyber risk. Thus, some mobile banking users tend to uninstall their banking application due to worry.

According to Lim (2022), Maybank mobile banking users sometimes face online service interruptions. They prefer to have mobile banking applications that have simple functions for them to complete the task that they want to do. A complicated user interface might have brought difficulties to the operation using mobile banking. The quality of the user interface is also a factor affecting the adoption of mobile banking among people in Malaysia. A quality user interface needs to meet the needs of the users. It also needs to be simple to use. Easy-to-use is an original element that has been included in the technology acceptance model. Thus, some users would rather go to a physical counter to do banking transactions than use mobile banking. People with lower incomes may prefer to use an easy-to-use application, while those with higher incomes may prefer to use a more complex application (Jebarajakirthy & Shankar, 2021).

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

People have a tendency to perceive their previous habits. People become accustomed to their surroundings and dislike change. As an example, old people prefer to speak to people physically rather than using social media, but the circumstance is improving because of COVID-19. This is because, during COVID-19, there is no choice for them to talk with people other than using social media. These people tend to discover the benefit and convenience brought to them by using social media. This encourages older people to continue to use social media. People's habits will shift continuously. Thus, one of the things we will discover is the habit. The difference in gender has a different opinion towards the habit as women might prefer to use an application that is similar to a common application whereas men can accept change (Ngcongong & Mnisi, 2014).

In short, mobile banking is available for Malaysians to use. However, due to several factors, the confidence of people in mobile banking has been affected. Therefore, this research aims to investigate the factors that cause people to lose trust in mobile banking.

### **1.4 Research question**

Given the above problem statement, this study has an objective to answer the following research questions:

1. What is the factors that affect the usage of mobile banking in Malaysia?
2. How would the customer background affect the usage of mobile banking in Malaysia?
3. Which factors most significantly affect the usage of mobile banking in Malaysia?

### **1.5 Research objective**

This research aims to fulfil the following objective:

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

1. To determine the factors that affect the usage of mobile banking in Malaysia
2. To examine the moderators affect between the factors and the usage of mobile banking in Malaysia.
3. To determine the most significant factors that affect the usage of mobile banking in Malaysia

### **1.6 Scope of study**

Mobile banking in this research is defined as commercial transactions banking transactions that are carry out by using electronic gadget like mobile phone and tablet. In depth, this study will be focusing on whether the moderators like education level, employment status, race and gender affect the usage of mobile phone in Malaysia. Thus, all Malaysian who own a bank account will be included in our study while the rest will be excluded.

### **1.7 Significance of Study**

This study has the purpose of contributing numerous insights for banking service providers, the government, and banking users.

The banking service provider has put much effort into encouraging their customers to use mobile banking. However, the concern of banking users about mobile banking should also be given focus. Thus, in this study, I want to assist banking service providers in finding out the factors that are influencing the usage of mobile banking and whether the banking users' backgrounds affect their willingness to use mobile banking.

This study can assist banking service providers in understanding the concerns of their customers. Banking service providers are only able to come up with the best solution to motivate their customers to use mobile banking services if they can capture their customers' concerns. Furthermore, this study assists banking service providers in understanding whether customer backgrounds will influence the

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

customer's willingness to use mobile banking or not. By understanding this, banking service providers will then be able to implement various strategies to attract customers from various backgrounds to use their mobile banking services if the background does affect the customer's willingness to use them.

Besides, this study also provides insight for the government to understand the infrastructure that needs to be improved and the policies that need to be in place to encourage the usage of mobile banking. In addition, it also helps the banking users have a better user experience by studying their concerns and providing information to the banking service provider so they can improve their service.

### **1.8 Chapter Summary**

This chapter describes the banking revolution, from traditional banking to mobile banking to digital banking. In addition, this chapter studied the attributes that will affect the usage of mobile banking, which include facilitating conditions, perceived risk, and others. Not only that, but this chapter outlined some demographic segments of customers that may moderate the attributes that will affect the usage of mobile banking. Past research mainly focuses on the study of the attributes that will affect the usage of mobile banking in Malaysia, whereas in my study, the demographic segment that will moderate the attributes that affect the usage of mobile banking in Malaysia is given focus. The objective of this study is to discover the factors that influences the usage of mobile banking in Malaysia and to examine customer backgrounds as moderators of the usage of mobile banking in Malaysia.

## **Chapter 2: Literetual Review**

### **2.1 Introduction**

This chapter will be reviewing journal articles that are related to my research. Firstly, the underlying theory, which is the UTAUT2 model, will be reviewed. Then, followed by the meaning of mobile banking, four attributes that will affect the usage of mobile banking and the meaning of gender, education level, and income as moderators will be reviewed. In addition, a framework has also been developed for this research.

### **2.2 Underlying Theory**

This section will be mainly outlined the theory that is used to conduct this study.

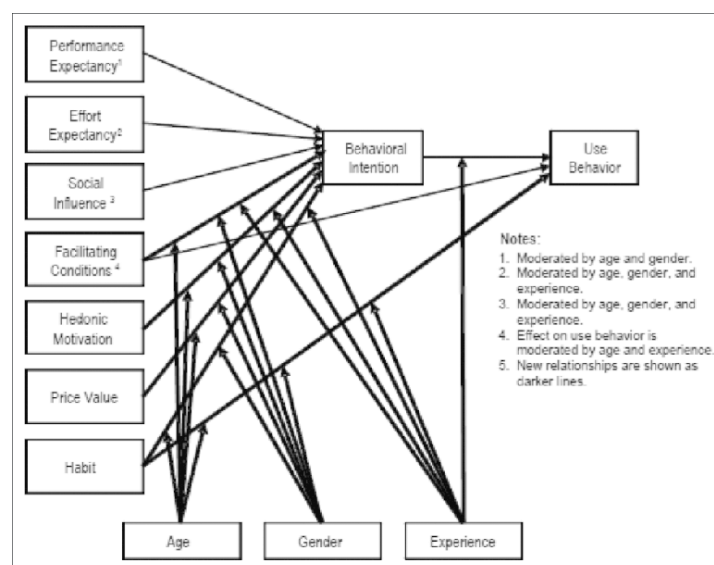
#### **2.2.1 UTAUT 2 model**

UTAUT was first developed by Venkatesh in the year 2003 (Venkatesh et al., 2003). The UTAUT model is developed after a thorough review of other key models that is also used show the adoption and usage of technology (Giovanis et al., 2019). The founder of the UTAUT model believes that UTAUT can perform better to illustrate the adoption and usage of technology as it is developed after careful review and comparison with other similar models. UTAUT has identified some of the most important variables that will influence the usage of a particular technology, which are performance expectancy (PE), facilitating condition (FC), effort expectancy (EE), and social influence (SF) (Giovanis et al., 2019). After several years

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

of using the UTAUT model, Venkatesh introduces the new UTAUT2 model in 2012. This is because the number of mobile applications, devices, and services that target the public has increased drastically recently (Kwateng et al., 2018). In UTAUT2, Venkatesh remained one of the four variables that are affecting the adoption and usage of technology. At the same time, he added three more factors, which are price value (PV), habit (H), and hedonic motivation (HM), into the new UTAUT2 model (Kwateng et al., 2018). Not only that, in UTAUT2, Venkatesh only includes three moderators in his model: age, gender, and experience (Kwateng et al., 2018). PE can be referred as the degree to which the user will be benefited as a result of using technology. FC is the capability of having resources and a system that can support an individual in using the technology. EE can be referred to as zero effort required due to the usage of technology. SI is an individual being influenced by a close relationship with friends or family to make use of certain technology (Kwateng et al., 2018). PV is the degree to which the customers are willing to pay to use the technology and think it is worth making use of the technology. The degree to which customers tend to use the technology repeatedly based on their user experience HM is the degree to which an individual feels happy as a result of using technology (Tarawneh et al., 2021).

Figure 2.1: UTAUT2 Model



Source: Ain et al. (2016)



## **2.3 Review of variables**

This section will be mainly reviewing all independent variables, dependent variables and moderators that will be using in this study.

### **2.3.1 Usage of Mobile banking (MBU)**

According to Shankar et al. (2020), technological advancement has contributed to many changes in the banking industry. Now, banking service providers have provided different platforms for the customer to perform their transactions, like automated teller machines (ATMs), mobile banking, internet banking, and more. Among all of these platforms, mobile banking can be said to be the most convenient and innovative platform when compared with others (Shankar et al., 2020). Mobile banking allows banking customers to carry out banking transactions via mobile phone. Not only that, the emergence of mobile banking has benefited both customers and banking service providers. Bank service providers can reach out to a large number of customers at an effective cost and in a short amount of time, while the customers can perform some of the banking activities like online transfers without going to the counter. (Jeberajakirthy & Shankar, 2021). With all these conveniences, mobile banking creates a lot of value for customers. However, most of the studies only focus on how customers receive Mobile banking has created value for the customers, but the other context is not the focus. As we know, the competition is getting more intense in the mobile banking world. Thus, banking service providers should also put more attention on understanding how mobile banking services can be integrated into customers' activities and their experiences using mobile applications as a platform to transact (Komulanien & Saraniemi, 2019).

### **2.3.2 Facilitating condition (FC)**

A facilitating condition is the extent to which an individual trusts that the city or an organisation has sufficient physical infrastructure to support the implementation of a system (Merhi et al., 2020). Facilitating conditions is also known as how customers think about the accessibility of resources to improve their usage of mobile banking. As in the case of mobile banking, it needs the customers to know how to install the application and how to use the features within it (Thusi & Maduku, 2020). Thus, it is important, as only by acquiring sufficient mobile knowledge will an individual be able to use mobile banking applications happily. Not only that, when the banking customers in Malaysia are transacting using mobile banking applications, some of the required infrastructures are electronic gadgets like mobile phones and tablets, high coverage and stable internet, as well as digital and financial literacy. (Merhi et al., 2020).

### **2.3.3 Perceived Risk (PR)**

Perceived risk is described as a condition where unfavourable results may occur and harm the individual (Van et al., 2021). Perceived risk can also be known as the extent of uncertainty regarding the security of innovation and the consequences of using the innovation (Rehman & Shaikh, 2020). According to Chakiso (2019), perceived risk is the type and extent of risk that customers will face when purchasing a product or using a service. There are several risk dimensions included in perceived risk, which are financial risk, physical risk, psychologic risk, time risk, performance risk, social risk (Chakiso, 2019). All of these risks can be recognised as factors that will affect the willingness of banking customers to make use of mobile banking applications (Rehman & Shaikh, 2020). In this research, financial risk will be applied. Financial risk can be defined as the risk that customers tend to make mistakes when using mobile banking, such as transaction errors and the wrong use of a bank account (Shuhidan et al., 2017).

### **2.3.4 Habit (H)**

Habit is defined as the degree to which an individual tends to act automatically during the learning process (Marpaung et al., 2021). In addition, "habit" is also known as the extent to which an individual can accept the existence of new technology and consequently make use of it. According to Thusi & Maduku (2020), habit is also known as the extent to which the individual will engage in action repeatedly and spontaneously. On the other hand, Osman & Tan (2020) state that habit is a very strong indicator of how an individual will make use of innovative technology in the future. They also stated that one's life experience, as well as the knowledge and abilities acquired, can influence one's habits. Thus, it is clearly shown that habit is strongly linked to the extent to which an individual will act with automaticity and repetition (Kamdjoung et al., 2021).

### **2.3.5 Interface design Quality (IDQ)**

According to Tarawneh et al. (2021), the quality of interface design is determined by the degree of quality of the screen's appearance, format, and processing. In addition, interface design affects the usability and accessibility of the system and mobile applications that are developed by the system developers. (Zaina et al., 2022). The overall presentation of the system's screen that allows individuals to change, access, and receive information is also referred to as interface design. (Kishabale,2021). Kishabale (2021) defines interface design as a tool that serves as a medium of communication between a user and an information system. In mobile banking, interface design quality is simply defined as the ease of use of the mobile banking application, the layout of the application, and the navigation function that is equipped in the application (Zhou et al., 2021).

### **2.3.6 Gender**

Gender is known as an optional element that is usually applied according to the cultural convention in society (Lindqvist et al., 2021). This is because gender is culturally and historically distinct and changeable. According to Cartwright & Nancarrow (2022), gender is usually interchangeable in a specific country. They also defined gender as an element that is not necessarily identified in legal documents. The authors further defined gender as an element that parents will always identify by the time the child is born; only when the child is grown will they find that their gender should not be identified in this way and they will identify themselves differently. (Cartwright & Nancarrow, 2022).

### **2.3.7 Education level**

Education is known as a method to share knowledge, ease the learning process, and motivate individuals to innovate (Guo et al., 2019). It is very crucial for the growth of both individuals and society. Education categories are different in different countries. However, the majority of countries have three main levels of education: primary, secondary, and tertiary (Manaa & Ul Hag, 2020). Education level can be a measurement for a lot of things. Education level can be used to assess social problems, mental and physical health, income, and family life (Tebar et al., 2022). Besides being a measurement, education level is also useful to eliminate poverty and promote wealth. The higher the education level, the lower the poverty rate (Guo et al., 2019).

### **2.3.8 Income**

According to Pereira (2019), income is a straightforward measure of someone's capacity to acquire what they are seeking. Financial resources are

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

a major factor in determining what an individual chooses to buy. In addition, income is likely an indicator of one's affordability and accessibility in purchases. (Puzzolo et al., 2019). Low-, medium-, and high-income groups are the three categories that are most frequently used to categorise income. Lower-income households could require supporting financing to cover recurring and unforeseen costs. Their sense of belonging to the community and their level of life satisfaction in society will improve with the supporting finances. (Lim et al., 2020).

### **2.4 Hypothesis Development**

This section will be developing hypothesis for this study.

#### **2.4.1 Facilitating Condition (FC)**

According to a study conducted by Baabdullah et al. (2019), facilities like the Internet and mobile phones were important determinants that influenced the use of mobile banking in Saudi Arabia. They concluded that facilitating conditions are important indicators that affect the usage of mobile banking among Saudi Arabians. Not only that, the facilitating condition is a crucial predictor that affects the actual use of mobile banking among millionaires in South Africa (Thusi & Maduku, 2020). In addition, Tarawneh et al. (2021) also stated that a facilitating condition is also a determinant that positively affects the usage of mobile banking in Malaysia.

H<sub>1</sub>: Facilitating condition positively influences customers' usage on mobile banking in Malaysia.

### **2.4.2 Perceived Risk (PR)**

Banking customers are worried about personal information being leaked to a third party and used illegally. Thus, it is concluded that perceived risk will negatively affect the usage of mobile banking in Malaysia (Rehman & Shaikh, 2020). In addition, Tarawneh et al. (2021) also found that the perceived risk of mobile banking will negatively affect both intent to use and actual usage of mobile banking in Malaysia. Not only that, the study by Abu-Taieh (2022) also supported the idea that perceived risk will negatively influence the usage of mobile banking.

H<sub>2</sub>: Perceived Risk (PR) negatively influence customers' usage of mobile banking in Malaysia.

### **2.4.3 Habit (H)**

According to the study conducted by Thusi and Maduku (2020), they mentioned that customers who always and repeatedly use mobile banking will continue to use mobile banking for transactions. They conclude that habits will positively affect the usage of mobile banking among customers. Not only that, but previous research also concluded habit is one of the strongest indicators that affect the usage of mobile banking in the context of Universiti Putra Malaysia (Osman & Tan, 2020). Tarawneh et al. (2021) also found that mobile banking will positively influence mobile banking usage in Malaysia.

H<sub>3</sub>: Habit positively influences customers' usage of mobile banking in Malaysia.

### **2.4.4 Interface design quality (IDQ)**

According to Zhou et al. (2021), the study concluded that interface design quality has a positive influence on service quality, which then positively

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

affects customer loyalty and the use of mobile banking in China. In addition, it was also concluded that interface design quality will have a positive impact on the usage of mobile banking (Tarawneh et al., 2021).

H<sub>4</sub>: Interface design quality positively influences customers' usage on mobile banking in Malaysia.

### **2.4.5 Gender**

Gender differences in mobile banking usage in Jordan, according to Abu-Taieh et al. (2022), will have an impact on the use of mobile banking. They further stressed that different types of initiatives should be taken to attract different genders to mobile banking applications. The expectation of different genders in mobile banking can be in terms of training, application design, etc.

H<sub>5a</sub>: Gender moderates relationship between facilitating condition and the mobile banking usage in Malaysia

H<sub>5b</sub>: Gender moderates relationship between perceived risk and the mobile banking usage in Malaysia

H<sub>5c</sub>: Gender moderates relationship between habit and the mobile banking usage in Malaysia.

H<sub>5d</sub>: Gender moderates relationship between interface design quality and the mobile banking usage in Malaysia.

### **2.4.6 Education Level**

The study conducted by Alkhalidi and Kharma (2019) concluded that the awareness of mobile banking is different between people with low and high education levels. In addition, in their study, they also noticed that people with different education levels will have a different level of concern towards

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

the risk posed by mobile banking, which causes them to be less likely to use mobile banking.

H<sub>6a</sub>: Education level moderates relationship between facilitating condition and the mobile banking usage in Malaysia

H<sub>6b</sub>: Education level moderates relationship between perceived risk and the mobile banking usage in Malaysia

H<sub>6c</sub>: Education level moderates relationship between habit and the mobile banking usage in Malaysia.

H<sub>6d</sub>: Education level moderates relationship between interface design quality and the mobile banking usage in Malaysia.

### **2.4.7 Income**

According to the study by Alkhalidi and Kharma (2019), people with different income levels have different levels of risk awareness when it comes to mobile banking. Not only that, in their study, they also noticed that people with different income levels will have different expectations of the ease of the mobile banking application.

H<sub>7a</sub>: Income moderates relationship between facilitating condition and the mobile banking usage in Malaysia

H<sub>7b</sub>: Income moderates relationship between perceived risk and the mobile banking usage in Malaysia

H<sub>7c</sub>: Income moderates relationship between habit and the mobile banking usage in Malaysia.

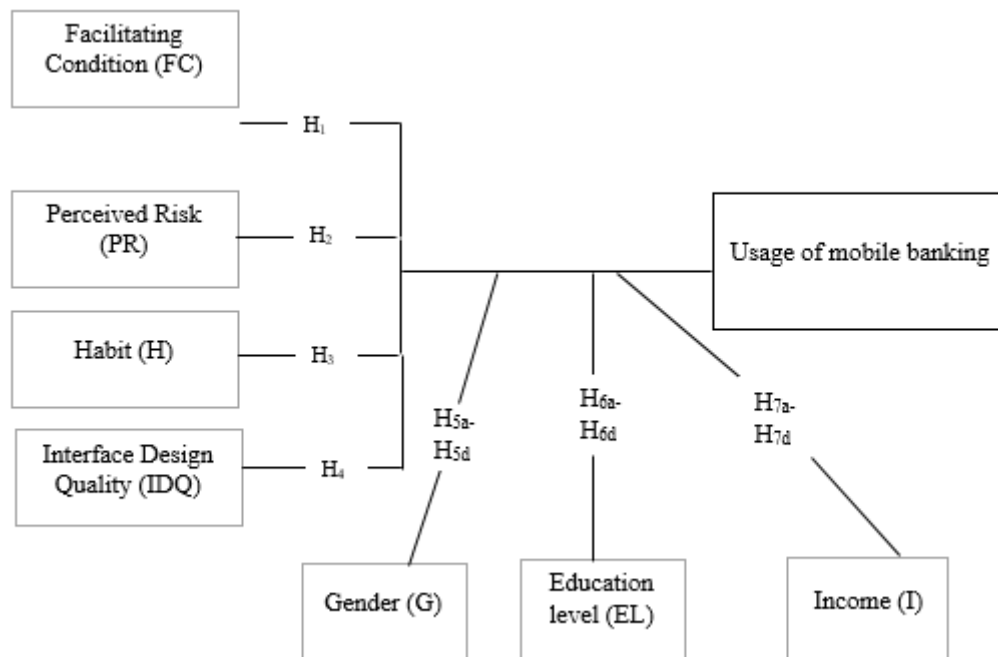
H<sub>7d</sub>: Income moderates relationship between interface design quality and the mobile banking usage in Malaysia.



## 2.5 Proposed Research Framework

In this session, research framework is proposed after the review of variables and the hypothesis development. The variables are connected and relationship is established (hypothesis). The figure 2.1 is presented the proposed research framework.

Figure 2.2: Proposed Research Framework



Source: Developed for the study

## 2.6 Chapter summary

In this chapter, the meaning of the all variables, and the demographic segment that will moderate the independent variable have been defined. Besides defining the meaning of each of the variables, a hypothesis for each of the independent variables had also been built. In addition, a research framework has also been drawn to provide a clear projection of the relationship between the dependent variable, independent variable, and moderators.

## **Chapter 3: Methodology**

### **3.1 Introduction**

In this chapter, general knowledge about secondary data will be discussed. In addition, the metadata, sources of secondary data, sampling design, data sampling, and proposed data analysis tool will also be discussed in this chapter.

### **3.2 Secondary Data**

In this research, secondary data will be used to examine the moderate effect of demographic segment towards the usage of mobile banking in Malaysia. Secondary data is the data which is not collected by the researcher. The analysis of data is based on the data that has been published or the raw data that is collected by the other researcher provided that the raw data is available publicly. (Church,2002). There are multiples ways available for researchers to gather secondary data of a selected industry, marketplace or even selected product. Not only that, secondary data also available in multiple forms like written, electronic or typed form. Secondary data can be internal source from institution database or external public source.

#### **3.2.1 Accessing secondary data**

Because secondary data have been chosen to conduct this research, it is necessary to assess the quality of the available data. In addition, an assessment is required to find out the ability of the data to answer the question and fulfil the objective of this research. This is because it is very important to ensure that the secondary data can provide the researcher with

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

sufficient and appropriate data about the research. This means that the secondary data that will be used in this research must have a lot of information that is relevant to the topic of this research so that the secondary data will be reasonable to use.

Some of the researchers tend to use the whole set of the dataset, which is challenging work for the other researchers (Long-Sutehall et al., 2011). Thus, the sorting of the dataset is important for researchers to fulfil certain purposes. Sorting can be used for a variety of purposes, including separating qualitative data from quantitative data, separating interview and observation data, identifying the most appropriate data that is relevant to the topic that will be studied, and more (Long-Sutehall et.al, 2011).

### **3.2.2 Process of analysing secondary data**

Research can involve several processes, including the collection of data, the analysis of that data, and the interpretation of that data to answer the question of the research. In general, secondary data do not have a specific process that is used to analyse the data; however, according to William (2007), the researchers proposed that firstly, the researcher needs to identify the research area and topic, then select the dataset according to the research area, and finally carry out a detailed analysis of the dataset.

### **3.2.3 Metadata of dataset**

Metadata can be defined as the resource's composition, contents, and creator (Leipzig et al., 2021). In this study, the size of secondary data is 340KB. It is saved in excel file format and the author of this data is Michelle Nguyen. The content of data is first created at 30/06/2021 and is last saved at 04/10/2021.

### 3.3 Sources of secondary data

The researcher is required to ensure that all of the secondary data is carefully identified before the data is used in the research. In this research, the data that is selected needs to include all variables that are listed in Chapter 2 to ensure that the selected data is valid for this study. For this study, the selected raw data must include the usage of mobile banking in Malaysia, and secondly, it must include the demographic segment that will be acting as moderators that moderate the relationship between the dependent variable and independent variable of mobile banking in Malaysia.

The source of secondary data that will be used in this research is Figshare. Figshare is a platform that allows all users to upload all of their findings to the platform to make them available for the public to cite and discover (*About Figshare, 2023*) The introduction of Figshare is the idea of Mark Hahnel. Figshare has partnered with several parties, including universities like Monash University, RMIT University, the University of Adelaide, and others, to improve the setting of research (*About figshare, 2023*). The data that is used in this research was obtained from Figshare and is raw data that was provided by Mo'men Awad Al Tarawneh, Yong Gun Fie, and Lan Ngu Yen with the title "Mobile Banking Adoption and Usage among Figshareians of Generation Y."

There are several features presented by Figshare. For researchers, it helps them to save time and energy by organising their research and maximising its effect (*Figshare features, 2023*). Publishers can benefit from Figshare as it helps them by assembling compelling information into a group to facilitate a presentation. In addition, it also helps publishers manage the high volume of data without affecting their infrastructure. On the other hand, an institution can also benefit from Figshare, as it helps them facilitate the management and distribution of research data (*Figshare features, 2023*).

### **3.4 Sampling Design**

Sampling is a method that researchers use to choose a small group of people from a broader population so that they may be used as research subjects in an investigation (Muhammad& Kabir, 2016). The correct sample collected is important for the researcher to make a wise conclusion. The sampling design of the research needs to be decided before the collection of data. The process of sampling is:

1. Determine the intended population of interest.
2. Choose a sampling framework.
3. Decide the size of the sample
4. Choosing sampling method
5. Practice the selected method

#### **3.4.1 Target Population**

Target population is the group of people who satisfy all the requirements for the study to be done (Muhammad& Kabir, 2016). The targeted population in this research is Malaysian who are using mobile banking.

#### **3.4.2 Sampling frame and location**

A sampling frame is the list of elements that the researcher is interested in conducting a study on (Bee et al., 2014). The secondary data collected from Figshare that includes the users of mobile banking in Malaysia, specifically Klang Valley, will be used in this research (Tarawneh et al., 2021).

#### **3.4.3 Sampling technique**

The sampling method provides a chance for researchers to select a particular individual from a population and gather data from them. (Saunders et al., 2019). Probability sampling and non-probability sampling are the two basic that can be

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

categorised under sampling techniques. Simple random sampling and cluster sampling are two examples of probability sampling techniques. On the other hand, convenience sampling, snowball sampling, and quota sampling are non-probability sampling techniques. In this research, non-probability sampling will be used throughout.

### **3.4.4 Sampling Size**

A study may utilise either a small, medium, or large sample size based on the scope (Vasileiou et al., 2018). Large sample sizes are required to collect data for the current study that correctly represents the targeted population, which is mobile banking users. In this study, I will have used all 504 respondents that have been collected in the secondary data.

## **3.5 Data Processing**

There are a few computational procedures that must be finished before doing any analysis. In this research, several independent variables, which are performance expectancy (PE), effort expectancy (EE), social influence (SI), hedonic motivation (HM), and price value (PV) in secondary data, will not be used.

## **3.6 Proposed Data Analysis Tool**

This section mainly propose the data analysis tool that will be using in this study.

### **3.6.1 Descriptive Analysis**

Descriptive analysis is used to describe and analyse the collected data thoroughly, either in the form of a table, graph, chart, or others (Borges et al., 2020). The demographic data collected in Section A will be tabulated in the table during the research. The use of this analysis technique helps the researcher achieve a reasonable level of data simplification.

### **3.6.2 Inferential analysis**

In this study, Pearson's correlation coefficient and multiple regression analysis are the types of inferential analysis that will be used.

#### **3.6.2.1 Multiple regression analysis**

Multiple regression analysis can be referred to as the prediction of regression equations that involve two or more independent variables or linear association measures used to analyse linear connections (Saunders et al., 2019). The general regression equation for this research is habit (H), facilitating condition (FC), perceived risk (PR), and interface design quality (IDQ), with the associated moderators such as gender, education level, and income.

#### **3.6.2.2 Pearson Correlation Coefficient**

This is a technique that is used to evaluate how strong the relationship between the dependent and independent variables is.

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

There will be an indirect association between the dependent variables and independent variables when it has a negative value and vice versa (Borges et al., 2020).

Table 3.1: Rules of thumb about Correlation

Correlation Coefficient	Correlation's strength
$\pm 0.91$ to $\pm 1.00$	Very high
$\pm 0.71$ to $\pm 0.90$	high
$\pm 0.41$ to $\pm 0.70$	Moderate
$\pm 0.21$ to $\pm 0.40$	Low
$\pm 0.00$ to $\pm 0.20$	Negligible

Source: Cheong et al., 2021

### **3.7 Chapter summary**

In this chapter, secondary data has been outlined as the research method that is used to conduct this research. In addition, the researcher also outlined the sources of data, sampling design, and data processing, and finally, the proposed data analysis tool has also been identified.



## **Chapter 4: Result and Finding**

### **4.1 Introduction**

In this chapter, all the data collected will via secondary data will be tabulated and presented according to the research method that have been chose in chapter 3. The whole process start with data screening, follow by tabulating the demographic information, and then analysis the result based on descriptive analysis, and inferential analysis.

### **4.2 Data Screening**

In this study, we utilize all 504 responses that have been recorded by the original author. All 504 responses that are collected are filled up by mobile banking users and can be continued to be used in this research.

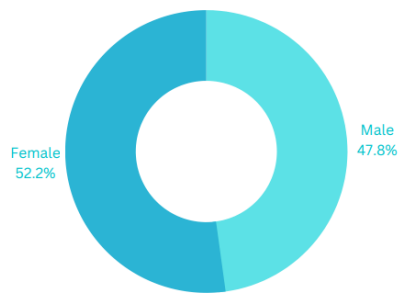
### 4.3 Descriptive analysis

This section mainly illustrates the demographic background of the respondents.

#### 4.3.1 Gender

The gender of the respondents is shown in Figure 4.1 and table 4.1

Figure 4.1: The gender of respondents



Source: Adopt from secondary data

Table 4.1 The gender of respondents

	Frequency	Percentage
Female	263	52.2%
Male	241	47.8%
Total	504	100%

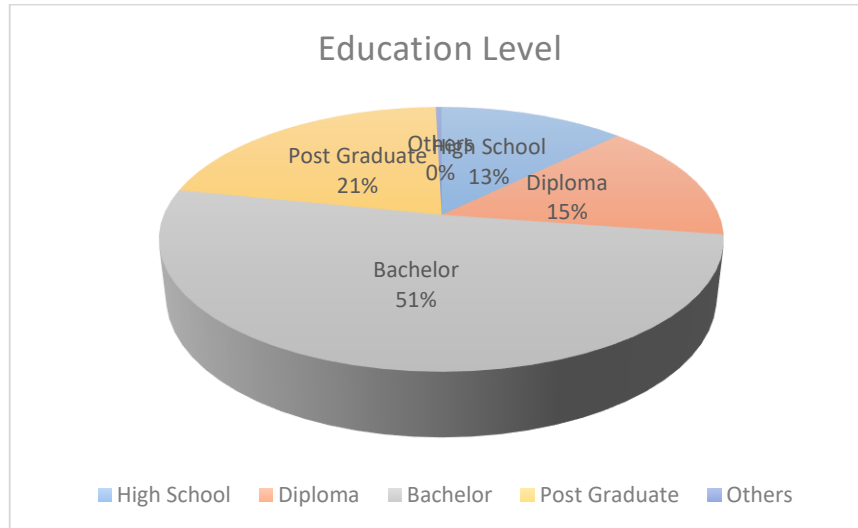
Source: Adopt from secondary data

The survey has been responded to by 504 respondents. 263 (52.2%) of them are female, and 241 (47.8%) of them are male.

### 4.3.2 Education Level

The education level of the respondents is shown in Figure 4.2 and table 4.2.

Figure 4.2: Education Level



Source: Adopt from secondary data

Table 4.2: Education Level of respondents

	Frequency	Percentage
High school	64	12.70%
Diploma	74	14.70%
Bachelor	256	50.79%
Post Graduate	108	21.43%
Others	2	0.40%
Total	504	100%

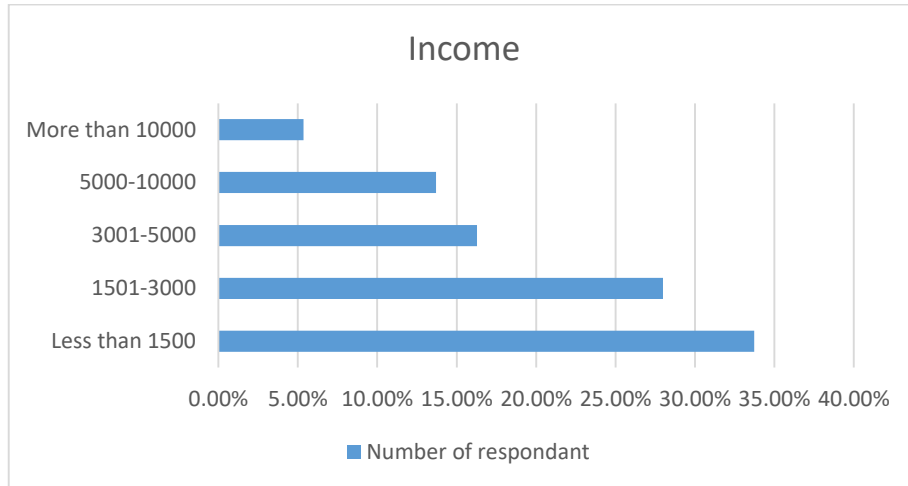
Source: Adopt from secondary data

Based on the data collected, half of the respondents (50.79%) of the respondents are having bachelor as an education level, 21.43% of respondents are having postgraduate education and 14.70% of respondents are having diploma as an education level. In addition, the respondents who have high school education levels accounted for 12.70%. The last education level group is others, and the respondents under this group only occupy 0.40%.

### 4.3.3 Income

The income of the respondents is shown in Figure 4.3 and table 4.3.

Figure 4.3: Income



Source: Adopt from secondary data

Table 4.3: Income Level

	Frequency	Percentage
Less than RM1500	170	33.73%
RM1501-RM3000	132	26.2%
RM3001-RM5000	105	20.83%
RM5001-RM100000	69	13.69%
More than 100000	28	5.56%
Total	504	100%

Source: Adopt from secondary data

According to the data collected, 33.73% of the respondents are receiving less than RM1500 as income, 26.20% of the respondents are receiving between RM1501 and RM3000 per month, and 20.83% of the respondents are receiving between RM3001 and RM5000 per month. In addition, the respondents who are receiving between RM5001 and RM10000 accounted for 13.69%. The last income group is above RM10000, and the respondents under this group only occupy 5.56%.

#### 4.4 Inferential analysis

In this study, Pearson correlation analysis and multiple regression analysis is the method that is used to test the relationship between independent variables and dependent variable.

##### 4.4.1 Pearson correlation analysis

Table 4.4: Pearson correlation Matric

		FC_Mean	H_Mean	PR_Mean	IDQ_Mean	MBU_Mean
FC_Mean	Pearson Correlation	1	.359**	-.195**	.450**	.576**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	504	504	504	504	504
H_Mean	Pearson Correlation	.359**	1	0.038	.418**	.498**
	Sig. (2-tailed)	.000		0.394	.000	.000
	N	504	504	504	504	504
PR_Mean	Pearson Correlation	-.195**	0.038	1	-.140**	-.195**
	Sig. (2-tailed)	.000	0.394		0.002	.000
	N	504	504	504	504	504
IDQ_Mean	Pearson Correlation	.450**	.418**	-.140**	1	.615**
	Sig. (2-tailed)	.000	.000	0.002		0
	N	504	504	504	504	504
MBU_Mean	Pearson Correlation	.576**	.498**	-.195**	.615**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	504	504	504	504	504

Sources: Developed for research (SPSS)

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Pearson correlation for this study is between -0.195 to 0.615. By having P value below 0.05, all independent variables for this study have a solid relationship with the mobile banking usage. Based on the results above, FC, H and IDQ are positively association while PR is negatively association.

### 4.4.2 Multiple Regression Analysis

Multiples regression analysis that is utilised to examine the relationship between FC, H, IDQ and PR and MBU are shown in the table below.

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.733 <sup>a</sup>	0.538	0.534	0.64954

a. Predictors: (Constant), IDQ\_Mean, PR\_Mean, H\_Mean, FC\_Mean

Sources: Developed for research (SPSS).

Table 4.5 presents mobile banking usage in Malaysia. The end result show that the R value for this study is 0.733 whereas the R square for this study is 0.538. R square value 0.538 indicated that the dependent variable is influenced by independent variables at the variation of 53.8%.

Table 4.6: ANOVA<sup>factors</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	245.115	4	61.279	145.246	.000 <sup>b</sup>
	Residual	210.527	499	0.422		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

b. Predictors: (Constant), IDQ\_Mean, PR\_Mean, H\_Mean, FC\_Mean

Sources: Developed for research (SPSS).

Table 4.6 presents the ANOVA from Model 1; the result is influential with a P-value below 0.05. Therefore, the model’s fitness is confirmed, and the result illustrates that the independent variables that consist of FC, H, PR, and IDQ are significant in explaining the dependent variable, which is an influence on the usage of mobile banking among Malaysians.

Table 4.7: Coefficients<sup>factors</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.21	0.256		-4.726	.000
	FC_Mean	0.455	0.052	0.309	8.719	.000
	PR_Mean	-0.093	0.031	0.093	-2.959	.003
	H_Mean	0.3	0.043	0.239	6.9	.000
	IDQ_Mean	0.561	0.056	0.363	10.074	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in Table 4.7 Malaysia show that FC, H, PR, and IDQ are significant to influence the usage of mobile banking among Malaysian bank users. This is because all four dependent variables have p-values smaller than 0.05.

Table 4.8: Model Summary for gender moderation on facilitating condition

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.589 <sup>a</sup>	0.347	0.344	0.77083

a. Predictors: (Constant), FC\_Mean1, INTFCG

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Sources: Developed for research (SPSS).

Table 4.8 presents the moderating effect of gender on the relationship between facilitating conditions and the usage of mobile banking in Malaysia. The result shows that the R-value for moderating this study is 0.589, whereas the R-square for this study is 0.347. R squared value of 0.347 indicated that the gender will affect the relationship between facilitating conditions and the usage of mobile banking with a variation of 34.7%.

Table 4.9 ANOVA<sup>a</sup> – Gender Vs FC

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	157.962	2	78.981	132.925	.000 <sup>b</sup>
Residual	297.681	501	0.594		
Total	455.642	503			

a. Dependent Variable: MBU\_Mean1

b. Predictors: (Constant), FC\_Mean1, INTFCG

Sources: Developed for research (SPSS).

Table 4.9 presents the ANOVA for the moderating effect of the gender between facilitating conditions and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators gender is significant in moderating the effect of facilitating conditions on the usage of mobile banking among Malaysians.

Table 4.10: Coefficients<sup>a</sup> – Gender Vs FC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.199	0.221		0.903	.367



THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

	INTFCG	-0.116	0.034	-0.122	-	.001
	FC_Mean1	0.832	0.053	0.564	3.371	.000

a. Dependent Variable: MBU\_Mean1

Sources: Developed for research (SPSS).

The coefficients table 4.10 show that gender is significant in moderating the relationship between facilitating conditions and the usage of mobile banking among Malaysian bank users. This is because the moderator has values P-value (0.001) smaller than 0.05. However, the beta is presented as a negative value (-0.122), which indicated that the relationship between facilitating conditions and mobile banking usage is stronger for males than it is for females.

Table 4.11: Model Summary for gender moderation on perceived risk

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.216 <sup>a</sup>	0.047	0.043	0.93115

a. Predictors: (Constant), PR\_Mean1, INTPRG

Sources: Developed for research (SPSS).

Table 4.11 presents the moderating effect of gender on the relationship between perceived risk and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.216, whereas the R-square for this study is 0.047. R squared value of 0.047 indicated that the gender will affect the relationship between perceived risk and the usage of mobile banking at a variation of 4.7%.

Table 4.12: ANOVA<sup>a</sup> – Gender Vs PR

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.259	2	10.629	12.259	.000 <sup>b</sup>
	Residual	434.384	501	0.867		

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

	Total	455.642	503			
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a. Dependent Variable: MBU\_Mean1

b. Predictors: (Constant), PR\_Mean1, INTPRG

Sources: Developed for research (SPSS).

Table 4.12 presents the ANOVA for the moderating effect of gender between perceived risk and the usage of mobile banking among Malaysians; the result is influential with P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, gender is significant in moderating the effect of perceived risk on the usage of mobile banking among Malaysians.

Table 4.13: Coefficients<sup>a</sup> – Gender Vs PR

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.23	0.14		30.225	.000
	INTPRG	0.062	0.042	0.065	1.488	.137
	PR_Mean1	-0.229	0.048	-0.208	-4.768	.000

a. Dependent Variable: MBU\_Mean1

Sources: Developed for research (SPSS).

The coefficients in table 4.13 show that gender is insignificant to moderate the relationship between perceived risk and the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value larger than 0.05.

Table 4.14: Model Summary for gender moderation on habit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518 <sup>a</sup>	0.268	0.266	0.81564

a. Predictors: (Constant), h\_Mean1, INTHG

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Sources: Developed for research (SPSS).

Table 4.14 presents the moderating effect of gender on the relationship between habit and the usage of mobile banking in Malaysia. The result shows that the R-value for moderating this study is 0.518, whereas the R-square for this study is 0.268. A R squared value of 0.268 indicated that the gender will affect the relationship between facilitating conditions and the usage of mobile banking with a variation of 26.8%.

Table 4.15: ANOVA<sup>a</sup> – Gender Vs H

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	122.34	2	61.17	91.947	.000 <sup>b</sup>
Residual	333.303	501	0.665		
Total	455.642	503			

a. Dependent Variable: MBU\_Mean1

b. Predictors: (Constant), h\_Mean1, INTHG

Sources: Developed for research (SPSS).

Table 4.15 presents the ANOVA for the moderating effect of gender between habit and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, gender is significant in moderating the effect of habit on the usage of mobile banking among Malaysians.

Table 4.16: Coefficients<sup>a</sup> – Gender Vs H

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.428	0.176		8.101	0
	INTHG	-0.137	0.036	-0.144	-3.75	0
	h_Mean1	0.606	0.048	0.483	12.577	0

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

a. Dependent Variable: MBU\_Mean1

Sources: Developed for research (SPSS).

The coefficients in table 4.16 show that gender is significant enough to moderate the relationship between habit and the usage of mobile banking among Malaysian bank users. This is because the moderator has p-values (0.000) smaller than 0.05. However, the beta is presented as a negative value (-0.144), which indicated that the relationship between facilitating conditions and mobile banking usage is stronger for males than it is for females.

Table 4.17: Model Summary for gender moderation on interface design quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.622 <sup>a</sup>	0.387	0.385	0.7466

a. Predictors: (Constant), IDQ\_Mean, INTIDQG

Sources: Developed for research (SPSS).

Table 4.17 presents the moderating effect of gender on the relationship between interface design quality and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.622, whereas the R-square for this study is 0.387. R square value of 0.387 indicated that gender will affect the relationship between interface design quality and the usage of mobile banking, as indicated by the variation of 38.7%.

Table 4.18: ANOVA<sup>a</sup> – Gender Vs IDQ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	176.381	2	88.191	158.22	.000 <sup>b</sup>
	Residual	279.261	501	0.557		

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

	Total	455.642	503			
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a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

Table 4.18 presents the ANOVA for the moderating effect of gender between interface design quality and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, gender is significant in moderating the effect of interface design quality on the usage of mobile banking among Malaysians.

Table 4.19: Coefficients<sup>a</sup>– Gender Vs IDQ

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.004	0.211		0.019	.985
	INTIDQG	-0.092	0.033	-0.097	-2.745	.006
	IDQ_Mean	0.934	0.054	0.604	17.179	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in table 4.19 show that gender is significant in moderating the relationship between interface design quality and the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.006) smaller than 0.05. However, the beta is presented as a negative value (-0.097), which indicated that the relationship between interface design quality and mobile banking usage was stronger for males than it was for females.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.20: Model Summary for education level moderation on facilitating condition

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.576 <sup>a</sup>	0.332	0.329	0.77943

a. Predictors: (Constant), FC\_Mean, INTFCE

Sources: Developed for research (SPSS).

Table 4.20 presents the moderating effect of education level on the relationship between facilitating conditions and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.576, whereas the R-square for this study is 0.332. R square value of 0.332 indicated that the education level will affect the relationship between perceived risk and the usage of mobile banking with a variation of 33.2%.

Table 4.21: ANOVA<sup>a</sup>–Education level Vs FC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	151.28	2	75.64	124.51	.000 <sup>b</sup>
	Residual	304.362	501	0.608		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

a. Predictors: (Constant), FC\_Mean, INTFCE

Sources: Developed for research (SPSS).

Table 4.21 presents the ANOVA for the moderating effect of education level between facilitating conditions and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.005. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, education level is significant in moderating the effect of facilitating conditions on the usage of mobile banking among Malaysians.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.22: Coefficientsa– Education level Vs FC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.124	0.223		0.556	.579
	INTFCE	0.012	0.036	0.012	0.337	.736
	FC_Mean	0.85	0.054	0.577	15.763	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in table 4.22 show that education level is insignificant to moderate the effect of facilitating conditions on the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.736) larger than 0.05.

Table 4.23: Model Summary for education level moderation on perceived risk

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.235 <sup>a</sup>	0.055	0.051	0.92698

a. Predictors: (Constant), PR\_Mean, INT\_EPR

Sources: Developed for research (SPSS).

Table 4.23 presents the moderating effect of education level on the relationship between perceived risk and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.235, whereas the R-square for this study is 0.055. R square value of 0.055 indicated that the education level will affect the relationship between perceived risk and the usage of mobile banking at a variation of 5.5%.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.24: ANOVAa– Education level Vs PR

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	25.141	2	12.571	14.629	.000 <sup>b</sup>
Residual	430.501	501	0.859		
Total	455.642	503			

a. Dependent Variable: MBU\_Mean

b. Predictors: (Constant), PR\_Mean, INT\_EPR

Sources: Developed for research (SPSS).

Table 4.24 presents the ANOVA for the moderating effect of education level between perceived risk and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, education level is significant in moderating the effect of perceived risk on the usage of mobile banking among Malaysians.

Table 4.25: Coefficientsa– Education level Vs PR

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.102	0.139		29.5	.000
	INT_EPR	-0.124	0.041	-0.132	-3.022	.003
	PR_Mean	-0.178	0.044	-0.178	-4.069	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in table 4.25 show that education level is significant enough to moderate the effect of perceived risk on the usage of mobile banking among Malaysian bank users. This is because Moderator's p-value (0.003) is smaller than 0.05. However, the beta is presented as a negative value (-



THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

0.132), which indicated that the education levels below bachelor's were more concerned about the risk brought by mobile banking.

Table 4.26: Model Summary for education level moderation on habit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.500 <sup>a</sup>	0.25	0.247	0.82574

a. Predictors: (Constant), H\_Mean, IN THE

Sources: Developed for research (SPSS).

Table 4.26 presents the moderating effect of education level on the relationship between habit and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.500, whereas the R-square for this study is 0.250. R squared value of 0.250 indicated that the moderators will affect the relationship between habit and the usage of mobile banking at a variation of 25%.

Table 4.27: ANOVAa – Education level vsH

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114.041	2	57.021	83.628	.000 <sup>b</sup>
	Residual	341.601	501	0.682		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

b. Predictors: (Constant), H\_Mean, IN THE

Sources: Developed for research (SPSS).

Table 4.27 presents the ANOVA for the moderating effect of education level on the relationship between habit and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, education level is significant in moderating the effect of habit on the usage of mobile banking among Malaysians.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.28: Coefficientsa– Education level VsH

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.368	0.178		7.7	.000
	INTHE	-0.045	0.036	-0.048	-1.245	.214
	H_Mean	0.623	0.049	0.497	12.833	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in table 4.28 show that education level is insignificant to moderate the effect of habit on the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.214) larger than 0.05.

Table 4.29: Model Summary for education level moderation on interface design quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.618 <sup>a</sup>	0.381	0.379	0.75005

a. Predictors: (Constant), IDQ\_Mean, INTIDQE

Sources: Developed for research (SPSS).

Table 4.29 presents the moderating effect of education level on the relationship between interface design quality and the usage of mobile banking in Malaysia. The result shows that the R-value for moderating this study is 0.618, whereas the R-square for this study is 0.381. A R square value of 0.381 indicated that education level will affect the relationship between interface design quality and the usage of mobile banking, with a variation of 38.1%.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.30: ANOVAa– Education level Vs IDQ

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	173.79	2	86.895	154.458	.000 <sup>b</sup>
Residual	281.853	501	0.563		
Total	455.642	503			

a. Dependent Variable: MBU\_Mean

a. Predictors: (Constant), IDQ\_Mean, INTIDQE

Sources: Developed for research (SPSS).

Table 4.30 presents the ANOVA for the moderating effect of education level between interface design quality and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, education level is significant in moderating the effect of interface design quality on the usage of mobile banking among Malaysians.

Table 4.31: Coefficientsa– Education level Vs IDQ

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.034	0.212		-0.161	.872
	INTIDQE	-0.057	0.034	-0.059	-1.69	.092
	IDQ_Mean	0.946	0.054	0.612	17.408	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in the table 4.31 show that education level is insignificant to moderate the effect of interface design quality on the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.092) larger than 0.05.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.32: Model Summary for income moderation on facilitating condition

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.579 <sup>a</sup>	0.335	0.333	0.77755

a. Predictors: (Constant), FC\_Mean, INTFCI

Sources: Developed for research (SPSS).

Table 4.32 presents the moderating effect of income on the relationship between facilitating conditions and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.579, whereas the R-square for this study is 0.335. R square value of 0.335 indicated that the income will affect the relationship between facilitating conditions and the usage of mobile banking at a variation of 33.5%.

Table 4.33: ANOVAa–Income Vs FC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	152.747	2	76.373	126.32	.000 <sup>b</sup>
	Residual	302.896	501	0.605		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

b. Predictors: (Constant), FC\_Mean, INTFCI

Sources: Developed for research (SPSS).

Table 4.33 presents the ANOVA for the moderating effect of income level between facilitating conditions and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, income is significant in moderating the effect of facilitating conditions on the usage of mobile banking among Malaysians.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.34: Coefficientsa–Income Vs FC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.128	0.222		0.579	.563
	INTFCI	0.056	0.035	0.058	1.594	.112
	FC_Mean	0.849	0.054	0.576	15.819	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in table 4.34 show that income is insignificant to moderate the effect of interface design quality on the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.112) larger than 0.05.

Table 4.35: Model Summary for income moderation on perceived risk

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.225 <sup>a</sup>	0.051	0.047	0.92914

a. Predictors: (Constant), PR\_Mean, INT\_IPR

Sources: Developed for research (SPSS).

Table 4.35 presents the moderating effect of income on the relationship between perceived risk and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.215, whereas the R-square for this study is 0.046. R squared value of 0.046 indicated that the moderators will affect the relationship between perceived risk and the usage of mobile banking with a variation of 4.6%.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.36: ANOVAa–Income Vs PR

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.126	2	11.563	13.394	.000 <sup>b</sup>
	Residual	432.516	501	0.863		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

a. Predictors: (Constant), PR\_Mean, INT\_IPR

Sources: Developed for research (SPSS).

Table 4.36 presents the ANOVA for the moderating effect of income level between perceived risk and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators income is significant in moderating the effect of perceived risk on the usage of mobile banking among Malaysians.

Table 4.37: Coefficientsa–Income Vs PR

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.112	0.139		29.502	.000
	INT_IPR	-0.101	0.039	-0.114	-2.599	.010
	PR_Mean	-0.183	0.044	-0.184	-4.199	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in the table 4.37 show that income level is significant enough to moderate the effect of perceived risk on the usage of mobile banking among Malaysian bank users. This is because a moderator has a p-value (0.010) smaller than 0.05. However, the beta is presented as a negative value (-0.114), which indicates that households with incomes greater than RM5000 are more concerned about the risks brought by mobile banking.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.38: Model Summary for income moderation on habit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.498 <sup>a</sup>	0.248	0.245	0.82695

a. Predictors: (Constant), H\_Mean, H\_I\_INT

Sources: Developed for research (SPSS).

Table 4.38 presents the moderating effect of income on the relationship between habit and the usage of mobile banking among Malaysians. The result shows that the R-value for moderating this study is 0.498, whereas the R-square for this study is 0.248. R squared value of 0.248 indicated that the income will affect the relationship between habit and the usage of mobile banking with a variation of 24.8%.

Table 4.39: ANOVAa–Income Vs H

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	113.037	2	56.518	82.648	.000 <sup>b</sup>
	Residual	342.606	501	0.684		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

b. Predictors: (Constant), H\_Mean, H\_I\_INT

Sources: Developed for research (SPSS).

Table 4.39 presents the ANOVA for the moderating effect of income level between habit and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, income is significant in moderating the effect of habit on the usage of mobile banking among Malaysians.

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.40: Coefficientsa–Income Vs H

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.367	0.182		7.515	.000
	H_I_INT	-0.011	0.038	-0.011	-0.279	.780
	H_Mean	0.622	0.05	0.496	12.472	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in the table 4.40 show that income is insignificant to moderate the effect of habit on the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.780) larger than 0.05.

Table 4.41: Model Summary for income moderation on interface design quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.615 <sup>a</sup>	0.378	0.376	0.75208

a. Predictors: (Constant), IDQ\_Mean, IDQ\_I\_INT

Sources: Developed for research (SPSS).

Table 4.41 presents the moderating effect of income on the relationship between interface design quality and the usage of mobile banking in Malaysia. The results show that the R value for moderating this study is 0.615, whereas the R square for this study is 0.378. R squared value 0378 indicated that the moderators will affect the relationship between interface design quality and the usage of mobile banking at a variation of 37.8%.



THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.42: ANOVA<sup>a</sup>–Income Vs IDQ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	172.262	2	86.131	152.28	.000 <sup>b</sup>
	Residual	283.38	501	0.566		
	Total	455.642	503			

a. Dependent Variable: MBU\_Mean

b. Predictors: (Constant), IDQ\_Mean, IDQ\_I\_INT

Sources: Developed for research (SPSS).

Table 4.42 presents the ANOVA for the moderating effect of income between interface design quality and the usage of mobile banking among Malaysians; the result is influential with a P-value below 0.05. Therefore, the model's fitness is confirmed, and the result illustrates that the moderators, income is significant in moderating the effect of interface design quality on the usage of mobile banking among Malaysians.

Table 4.43: Coefficients<sup>a</sup>–Income Vs IDQ

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.063	0.212		-0.297	0.767
	IDQ_I_INT	-0.012	0.032	-0.013	-0.377	0.707
	IDQ_Mean	0.951	0.055	0.615	17.442	.000

a. Dependent Variable: MBU\_Mean

Sources: Developed for research (SPSS).

The coefficients in table 4.43 show that income is insignificant to moderate the effect of interface design quality on the usage of mobile banking among Malaysian bank users. This is because the moderator has a p-value (0.707) larger than 0.05.

## 4.5 Hypothesis Testing

The summary result of the hypothesis result has the status below.

Table 4.44: Hypothesis table

Hypothesis Testing	Result	Supported/Not Supported
H <sub>1</sub> : Facilitating condition positively influences customers' usage on mobile banking in Malaysia.	0.000 < 0.05	Supported
H <sub>2</sub> : Perceived Risk (PR) negatively influence customers' usage of mobile banking in Malaysia	0.003 < 0.05	Supported
H <sub>3</sub> : Habit (H) positively influences customers' usage of mobile banking in Malaysia	0.000 < 0.05	Supported
H <sub>4</sub> : Interface design quality (IDQ) positively influences customers' usage on mobile banking in Malaysia.	0.000 < 0.05	Supported
H <sub>5a</sub> : Gender moderates relationship between facilitating condition and the mobile banking usage in Malaysia	0.001 < 0.05	Supported
H <sub>5b</sub> : Gender do not moderates relationship between perceived risk and the mobile banking usage in Malaysia.	0.137 > 0.05	Not supported
H <sub>5c</sub> : Gender moderates relationship between habit and the mobile banking usage in Malaysia	0.000 < 0.05	Supported
H <sub>5d</sub> : Gender moderates relationship between interface design quality and the mobile banking usage in Malaysia.	0.006 < 0.05	Supported
H <sub>6a</sub> : Education level do not moderates relationship between facilitating condition and the mobile banking usage in Malaysia.	0.736 > 0.05	Not supported
H <sub>6b</sub> : Education level moderates relationship between perceived risk and the mobile banking usage in Malaysia.	0.003 < 0.05	Supported

THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

H <sub>6c</sub> : Education level do not moderates relationship between habit and the mobile banking usage in Malaysia.	0.214 > 0.05	Not supported
H <sub>6d</sub> : Education level do not moderates relationship between interface design quality and the mobile banking usage in Malaysia.	0.092 > 0.05	Not supported
H <sub>7a</sub> : Income do not moderates relationship between facilitating condition and the mobile banking usage in Malaysia.	0.112 > 0.05	Not supported
H <sub>7b</sub> : Income moderates relationship between perceived risk and the mobile banking usage in Malaysia.	0.01 < 0.05	Supported
H <sub>7c</sub> : Income do not moderates relationship between habit and the mobile banking usage in Malaysia.	0.780 > 0.05	Not supported
H <sub>7d</sub> : Income do not moderates relationship between interface design quality and the mobile banking usage in Malaysia.	0.707 > 0.05	Not supported

Source: Developed for the study

#### 4.5.1 Facilitating condition (FC)

H<sub>0</sub>: There is negative relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

H<sub>1</sub>: There is positive relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

Reject H<sub>0</sub>, if p value < 0.05 Table 4.45 presents there is an influential value of FC, where it results in 0.000 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that facilitating condition has a major impact towards customers' usage on mobile banking in Malaysia.

#### **4.5.2 Perceived Risk (PR)**

H<sub>0</sub>: There is negative relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

H<sub>2</sub>: There is positive relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is an influential value of PR, where it results in 0.021 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that perceived risk has a major impact towards customers' usage on mobile banking in Malaysia.

#### **4.5.3 Habit (H)**

H<sub>0</sub>: There is negative relationship between habit and the customers' usage on mobile banking in Malaysia.

H<sub>3</sub>: There is positive relationship between habit and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is an influential value of H, where it results in 0.000 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that habit has a major impact towards customers' usage on mobile banking in Malaysia.

#### **4.5.4 Interface design quality (IDQ)**

H<sub>0</sub>: There is negative relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

H<sub>4</sub>: There is positive relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Table 4.45 presents there is an influential value of IDQ, where it results in 0.000 below 0.05. Therefore,  $H_0$  is not supported, and  $H_1$  is supported. This demonstrates that interface design quality has a major impact towards customers' usage on mobile banking in Malaysia.

### **4.5.5 Moderation effect of gender between facilitating condition and mobile banking usage**

$H_0$ : Gender will not moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

$H_{5a}$ : Gender will moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is moderation effect of gender on relationship between FC and MBU, where it results in 0.001 below 0.05. Therefore,  $H_0$  is not supported, and  $H_1$  is supported. This demonstrates that gender will moderate the relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

### **4.5.6 Moderation effect of gender between perceived risk and mobile banking usage**

$H_0$ : Gender will not moderate the relationship between perceived risk the customers' usage on mobile banking in Malaysia.

$H_{5b}$ : Gender will moderate the relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of gender on relationship between PR and MBU, where it results in 0.137 above 0.05. Therefore,  $H_0$  is supported, and  $H_1$  is not supported. This demonstrates that gender will not

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

moderate the relationship perceived risk and the customers' usage on mobile banking in Malaysia.

### **4.5.7 Moderation effect of gender between habit and mobile banking usage**

H<sub>0</sub>: Gender will not moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

H<sub>5c</sub>: Gender will moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is moderation effect of gender on relationship between gender H and MBU, where it results in 0.000 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that gender will moderate the relationship habit and the customers' usage on mobile banking in Malaysia.

### **4.5.8 Moderation effect of gender between interface design quality and mobile banking usage**

H<sub>0</sub>: Gender will not moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

H<sub>5d</sub>: Gender will moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is moderation effect of gender on relationship between IDQ and MBU, where it results in 0.006 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that gender will moderate the relationship interface design quality and the customers' usage on mobile banking in Malaysia.

#### **4.5.9 Moderation effect of education level between facilitating condition and mobile banking usage**

H<sub>0</sub>: Education level will not moderate the relationship between facilitating condition the customers' usage on mobile banking in Malaysia.

H<sub>6a</sub>: Education level will moderate the relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of education level on relationship between FC and MBU, where it results in 0.736 above 0.05. Therefore, H<sub>0</sub> is supported, and H<sub>1</sub> is not supported. This demonstrates that education level will not moderate the relationship facilitating condition and the customers' usage on mobile banking in Malaysia.

#### **4.5.10 Moderation effect of education level between perceived risk and mobile banking usage**

H<sub>0</sub>: Education level will not moderate the relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

H<sub>6b</sub>: Education level will moderate the relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is moderation effect of education level on relationship between PR and MBU, where it results in 0.03 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that education level will moderate the relationship perceived risk and the customers' usage on mobile banking in Malaysia.

#### **4.5.11 Moderation effect of education level between habit and mobile banking usage**

H<sub>0</sub>: Education level will not moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

H<sub>6c</sub>: Education level will moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of education level on relationship between H and MBU, where it results in 0.214 above 0.05. Therefore, H<sub>0</sub> is supported, and H<sub>1</sub> is not supported. This demonstrates that education level will not moderate the relationship habit and the customers' usage on mobile banking in Malaysia.

#### **4.5.12 Moderation effect of education level between interface design quality and mobile banking usage**

H<sub>0</sub>: Education level will not moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

H<sub>6d</sub>: Education level will moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of education level on relationship between IDQ and MBU, where it results in 0.092 above 0.05. Therefore, H<sub>0</sub> is supported, and H<sub>1</sub> is not supported. This demonstrates that education level will not moderate the relationship interface design quality and the customers' usage on mobile banking in Malaysia.



#### **4.5.13 Moderation effect of income between facilitating condition and mobile banking usage**

H<sub>0</sub>: Income will not moderate the relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

H<sub>7a</sub>: Income will moderate the relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of income on relationship between FC and MBU, where it results in 0.112 above 0.05. Therefore, H<sub>0</sub> is supported, and H<sub>1</sub> is not supported. This demonstrates that income will not moderate the relationship between facilitating condition and the customers' usage on mobile banking in Malaysia.

#### **4.5.14 Moderation effect of income between perceived risk and mobile banking usage**

H<sub>0</sub>: Income will not moderate the relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

H<sub>7b</sub>: Income will moderate the relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is moderation effect of income on relationship between PR and MBU, where it results in 0.01 below 0.05. Therefore, H<sub>0</sub> is not supported, and H<sub>1</sub> is supported. This demonstrates that income will moderate the relationship between perceived risk and the customers' usage on mobile banking in Malaysia.

#### **4.5.15 Moderation effect of income between habit and mobile banking usage**

H<sub>0</sub>: Income will not moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

H<sub>7c</sub>: Income will moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of income on relationship between H and MBU, where it results in 0.780 above 0.05. Therefore, H<sub>0</sub> is supported, and H<sub>1</sub> is not supported. This demonstrates that income will not moderate the relationship between habit and the customers' usage on mobile banking in Malaysia.

#### **4.5.16 Moderation effect of income between interface design quality and mobile banking usage**

H<sub>0</sub>: Income will not moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

H<sub>7d</sub>: Income will moderate the relationship between interface design quality and the customers' usage on mobile banking in Malaysia.

Table 4.45 presents there is no moderation effect of income on relationship between IDQ and MBU, where it results in 0.707 above 0.05. Therefore, H<sub>0</sub> is supported and H<sub>1</sub> is not supported. This demonstrates that income will not moderate the relationship interface design quality and the customers' usage on mobile banking in Malaysia.

## **4.6 Chapter summary**

In this chapter, pie charts and bar charts were used to show the demographic characteristics of the respondents. In addition, to determine the relationship between the dependent and independent variables, Pearson correlation and multiple linear regression analyses were performed using the data obtained from Figshare on 504 respondents in Malaysia. Not only that, but multiple regression analysis was also carried out to investigate the moderating impact of moderators on the connection between the dependent and independent variables.

## **Chapter 5: Discussion**

### **5.1 Introduction**

This chapter covered the investigation of the findings from Chapter 4, which also aims to address the research questions and objectives, examine the consequences of the current study, accept its limits, make suggestions for future research, and draw conclusions.

### **5.2 Discussion on 1<sup>st</sup> objective**

The first objective of this study is to find out the factors that affect the usage of mobile banking in Malaysia. To achieve this objective, secondary data is reanalysed. Based on the research, individuals need basic telecommunications infrastructure and knowledge to facilitate the usage of mobile banking (Thusi & Maduku, 2020). The geographical coverage of basic infrastructure, such as telecommunication towers, enables the usage of mobile banking (Merhi et al., 2020). In addition, having a basic understanding of mobile banking is crucial for individuals to be able to utilise the features of mobile banking. Besides, the willingness and repetition of using the mobile banking application are important (Thusi & Maduku, 2020). The user experience of mobile banking applications should be similar to most common applications. Not only that, according to the research, individuals prefer visionary designs, such as attractive colours and responsive sizes, on a mobile banking application (Tarawneh et al., 2021). The quality of the interface design could determine the user experience and affect the usage of mobile banking. Aside from that, individuals want to avoid transaction errors and the wrong use of bank accounts. Thus, the mobile banking system should be designed in a way that can reduce the possibilities of transaction error and the wrong use of a bank account. (Shuhidan et al., 2017).

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

This study identified 4 factors: facilitating conditions, perceived risk, habit, and interface design quality, which are extremely affecting the usage of mobile banking applications. Among all of these factors, interface design quality is the most significant factors to influence the mobile banking usage in Malaysia as it has the highest standard coefficient beta. It is followed by facilitating condition, habit and interface design quality.

### **5.3 Discussion on 2<sup>nd</sup> objective**

The second objective of this study is to examine the moderator's effect between the factors and the usage of mobile banking in Malaysia. Based on the study, gender will moderate the relationship between facilitating conditions. It shows that different genders have different expectations of the infrastructure that will facilitate their use of mobile banking. A male will be more conscious of the presence of good infrastructure than a female. Not only that, but male also emphasise the user experience of mobile banking applications, which should be similar to most of the common ones. In addition, the male will be more conscious of the colour and responsiveness of the mobile banking application, which can attract them to use it. Aside from that, citizens with an education level lower than a bachelor's are more concerned about making mistakes when using mobile banking, such as transaction errors and incorrect use of bank accounts. Apart from that, citizens with an income of more than RM5,000 are more concerned about the risk brought by mobile banking.

In overall, these three moderators could moderate the relationship between facilitating condition, perceived risk, habit, interface design quality & mobile banking usage. But in some of the case, the moderators are not significantly moderate the relationship between facilitating condition, perceived risk, habit, interface design quality & mobile banking usage. Although its believed that the sample size is proportionally enough to represent the population, but the samples might bias towards certain decision.

## **5.4 Implication**

This research studies the moderator's effect between the factors and the usage of mobile banking in Malaysia. Thus, the UTAUT model is modified accordingly to ensure that it fits with the context of this research. This study had several implications, including theoretical and managerial implications. The subsequent sections of this paper will focus on the implications of this research.

### **5.4.1 Theoretical implication**

This study provides significant theoretical contributions to the existing literature and offers benefits to academics in various ways.

Firstly, this study has studied and wants to understand the moderator's effect on the usage of mobile banking. Previously, the researchers mainly studied the adoption of mobile banking by using a basic framework that only included dependent and independent variables. There is a very limited amount of study that will include moderators. Even when the study includes moderators, it will only include age, gender, and experience. Moderators such as education level and income that are used in this study were not used by the researcher. This means that there is not enough information about how factors such as education level and income affect the use of mobile banking. This study fills the gaps in existing literature and knowledge by providing more information about how moderators affect the use of mobile banking. It can serve as a reference for future studies in the same area.

Aside from that, this study further simply the UTAUT2 model for understanding the usage of mobile banking. To make sure that the model used to perform this research is the most suitable for the study, the model must be modified. (Ventakesh et al., 2003). In this study, the UTAUT2 model was modified by adding new variables and removing irrelevant variables from the original model. In this study, the variables, age, experience, performance expectancy, effort expectancy, social influence, hedonic motivation, price, and price value have been eliminated, while

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

interface design quality, perceived risk, income, and education level have been included as new variables.

### **5.4.2 Managerial Implication**

Even though Malaysian users of mobile banking have benefited much from it, there are still certain issues that keep them from doing so. The main issue is that Malaysia's mobile banking system regularly experiences outages. This has brought a lot of inconvenience to customers who would like to use mobile banking to perform a transaction. The banking service provider should monitor their mobile application from time to time. If there is any suspicious activity happening on their system, prompt action needs to be taken to avoid creating a disaster for the users. Not only that, to reduce the system problem, the banking service provider shall also carry out maintenance on the system consistently to ensure that it always operates at optimal status.

In addition, one should not neglect the importance of supporting infrastructure to facilitate the use of mobile banking. Thus, the government has to ensure that there is sufficient internet coverage all around Malaysia, including those rural areas. Internet coverage is the basic infrastructure that is required for the citizen to carry out mobile banking. Not only that, but the banking service providers are also playing important roles in this situation, where they have to transfer the knowledge of using mobile banking applications to the citizen, especially those who are living in rural areas and with slightly lower education levels. This is because if they do not have sufficient knowledge, they will find it challenging to perform online banking transactions.

## 5.5 Limitation

As with other studies, this one also has some limitations that need to be improved in the future.

First of all, the sample data that were collected by the previous researchers are small. This is because all of the moderators chosen should have an effect on the variables. However, in this study, each variable was only affected by one moderator out of the three moderators studied (Nanjundeswaraswamy & Divakar, 2021). Referring to Cochran's formula, the larger the population, the larger the sample size. Hence, the sample size used in this study could not represent the entire population of Malaysia, as Malaysia will have over 33.5 million people in 2023.

In addition, the previous researchers only cover a certain period, from which the data was collected. However, the acceptance of technology such as mobile banking systems is a dynamic phenomenon. It requires the researcher to continuously capture the usage of mobile banking from stage to stage so that they can have a better and more meaningful insight. It is a recurring issue in research on technology usage, as recognised by scholars like Gao et al. (2015) in the context of healthcare devices, Milanovic et al. (2020) in the context of insurance telematics, and Shaw & Kesharwani (2019) in the context of mobile payments.

Not only that, this research consists of a dimension problem in which previous researchers only make use of quantitative research to collect the data. Qualitative research such as interviews, observation, case studies, etc. is not being used in this study. In this study, using only quantitative research poses a limitation because pure data is not sufficient and is usually only able to recognise the research question that requires further research through qualitative research (Kelle, 2006). In addition, it cannot identify unknown explanatory factors, improperly stated models, and unobserved discrepancies in quantitative data. Not only that, by only using quantitative research, it is unable to know the validity of the data collected (Kelle, 2006). Quantitative research only sticks with the sample data; it is unable to know more data that can be obtained via a verbal interview with the people.



## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

Aside from that, the age range of the data is very limited, as the previous researches only collected data from Generation Y, which is between 18 and 38 years old. By collecting data only from this age range, the researcher can only conclude that mobile banking is used in this age range. The other age ranges are being neglected in this study, which makes this research not useful enough for mobile banking service providers who want to improve the mobile banking application for all users.

### **5.6 Recommendation**

In response to the shortcomings of the current study, the following paragraphs offer a few suggestions for the direction of future research. Recognising the sample data is too small, future researchers should increase the sample size. According to Andrade (2020), the research will be more accurate only when the sample size is larger than necessary. The moderators will only be significant to moderate the variables when the data is large and accurate.

Aside from that, to solve the issue of dynamic phenomena, future researchers are encouraged to conduct a longitudinal study that covers repeated research over a long period. A longitudinal study can be defined as a type of study that uses several observations of the same variables over a long or short period. The advantage of conducting a longitudinal study to understand the usage of technology such as mobile banking is that it can identify the changes and development of the mobile banking application. In comparison to conducting a cross-sectional study, researchers can get more thorough and insightful insights by using a longitudinal study design since it allows for better adherence to the topic over time.

Besides, it is suggested that future studies should include more citizens from different age ranges. As an example, Generation X and Generation Z are suggested to be included in the study. This is because they are also users of mobile banking, and different age ranges are influenced by different factors that will attract them to use mobile banking. Their concern is also very important for banking service

## THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN MALAYSIA

providers to improve their applications. Therefore, including the other age range and investigating the factors that will affect all age ranges of mobile banking usage as a whole can help mobile banking providers create an application that is useful for every age range.

In addition, further study should compromise the use of both qualitative and quantitative research in conducting a related study. This is because by combining both dimensions in research, the disadvantage of using only one research technique can be offset. As an example, by compromising both research methods, the issues mentioned in the limitation, such as the issue of validity and the issue of failure to identify unknown explanatory factors, can be overcome by combining qualitative research in future studies (Kelle, 2006). On the other hand, an issue that arises due to only relying on qualitative research, such as oversized scope and a focus on the marginal case, can also be reduced by using a mix-method approach (Kelle, 2006).

### **5.7 Chapter Summary**

In conclusion, four variables associated with the use of mobile banking have been examined in this study, along with three moderators. It has been discovered that the usage of mobile banking is significantly influenced by all of the independent factors, including the facilitating condition, perceived risk, habit, and interface design quality. The study also shows that education level and income only modifies the association between perceived risk and mobile banking usage, whereas gender modify the relationship between facilitating condition, habit, and interface design quality. Overall, the consequences, restrictions, and suggestions made by this study might be a helpful resource for researchers in the future.

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THE MODERATORS AFFECT ON USAGE OF MOBILE BANKING IN  
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