

A STUDY ON THE FACTORS AFFECTING  
UNIVERSITI TUNKU ABDUL RAHMAN (UTAR)  
FINAL YEAR BUSINESS UNDERGRADUATE  
STUDENTS' ADOPTION DECISIONS IN MOBILE  
COMMERCE

BY

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requirement for the degree of

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S.D.G.

## DEDICATION

I would like to dedicate this research to my family, especially to my parents. Without their blessings and support, this research would not be possible.

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## TABLE OF CONTENTS

	Page
Copyright Page.....	ii
Declaration .....	iii
Acknowledgement .....	iv
Dedication .....	v
Table of Contents .....	vi
List of Tables .....	x
List of Figures .....	xi
List of Abbreviations.....	xii
Preface .....	xiii
Abstract .....	xiv

### **CHAPTER ONE: RESEARCH OVERVIEW**

1.0 Introduction.....	1
1.1 Research Background .....	1
1.2 Problem Statement .....	2
1.3 Research Objectives.....	3
1.3.1 General Objective .....	3
1.3.2 Specific Objectives .....	3
1.4 Research Questions .....	4
1.5 Significance of the Study .....	5
1.6 Chapter Layout.....	5
1.7 Conclusion .....	5

### **CHAPTER TWO: LITERATURE REVIEW**

2.0 Introduction.....	6
2.1 Review of the Literature .....	6
2.1.1 Perceived Ease of Use (PEOU).....	6

2.1.2 Perceived Usefulness (PU) .....	7
2.1.3 Perceived Barriers (PE).....	8
2.1.4 Perceived Benefits (PB).....	9
2.2 Review of Relevant Theoretical Models.....	11
2.3 Proposed Conceptual Framework .....	12
2.4 Hypotheses Development .....	12
2.5 Conclusion .....	13

### **CHAPTER 3: METHODOLOGY**

3.0 Introduction.....	14
3.1 Research Design.....	14
3.1.1 Quantitative Research .....	14
3.2 Data Collection Methods .....	15
3.2.1 Primary Data .....	15
3.2.2 Secondary Data .....	15
3.3 Sampling Design.....	16
3.3.1 Target Population.....	16
3.3.2 Sampling Location and Sampling Elements .....	16
3.3.3 Sampling Technique .....	17
3.3.4 Sampling Size .....	17
3.4 Research Instrument.....	17
3.4.1. Questionnaire .....	17
3.4.2. Questionnaire Design.....	18
3.4.3. Pilot Test .....	19
3.5 Constructs Measurement.....	20
3.5.1. Sources of the Questions.....	20
3.5.2. Scale Measurement .....	21
3.5.2.1. The Nominal Scale.....	22
3.5.2.2. The Interval Scale .....	22
3.6 Data Processing.....	22

3.7 Data Analysis .....	23
3.7.1 Descriptive Analysis .....	23
3.7.2 Reliability Analysis.....	24
3.7.3 Inferential Analysis .....	24
3.7.4 Normality analysis .....	25
3.8 Conclusion .....	25

## **CHAPTER 4: DATA ANALYSIS**

4.0 Introduction.....	26
4.1 Descriptive Analysis .....	26
4.1.1 Respondent Demographic Profile .....	26
4.1.1.1 Gender.....	26
4.1.1.2 Age.....	27
4.1.1.3 Cultural Heritage.....	27
4.1.1.4 Marital Status .....	28
4.1.1.5 Highest Education Completed .....	28
4.1.1.6 Monthly Allowance .....	29
4.1.1.7 Purchase Frequency .....	29
4.2 Confirmatory Factor Analysis.....	30
4.2.1 Creation of Inner and Outer Model Analysis.....	30
4.2.2 Inner and Outer Model Analysis.....	32
4.2.3 Research Final Model .....	33
4.3 Scale Measurement .....	34
4.3.1 Normality Analysis .....	34
4.3.2 Reliability Test.....	35
4.3.3 Validity Analysis .....	36
4.4 Inferential Analysis.....	38
4.4.1 Path Coefficients Analysis.....	38
4.4.2 Coefficient of Determination (R square) .....	39
4.4.3 Collinearity Assessment.....	40
4.5 Conclusion .....	40



## **CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS**

5.0 Introduction.....	41
5.1 Summary of Statistical Analyses .....	41
5.1.1 Description Analysis.....	41
5.1.2 Normality Analysis .....	42
5.1.3 Reliability and Validity Analysis.....	42
5.1.4 Inferential Analysis.....	42
5.2 Discussions of Major Findings .....	43
5.3 Implications of the Study to Public and Private Policy .....	45
5.3.1 Managerial Implications .....	46
5.4 Limitations of the Study.....	47
5.5 Recommendations for Future Research.....	47
5.6 Conclusion .....	48
References.....	49
Appendix.....	57

## LIST OF TABLES

	Page
Table 3.1: Summary of Questionnaire Design.....	19
Table 3.2: Sources of the Questions .....	20
Table 4.1: Gender.....	26
Table 4.2: Age.....	27
Table 4.3: Cultural Heritage .....	27
Table 4.4: Marital Status.....	28
Table 4.5: Highest Education Completed .....	28
Table 4.6: Monthly Allowance .....	29
Table 4.7: Purchase Frequency .....	30
Table 4.8: Normality Test.....	34
Table 4.9: Reliability Analysis .....	36
Table 4.10: Fornell-Larcker Criterion.....	37
Table 4.11: Item Factor Loading Output .....	37
Table 4.12: Path Coefficient Analysis .....	39
Table 4.13: Residual Analysis .....	39
Table 4.14: Variance Inflation Factors (VIF) .....	40

## LIST OF FIGURES

	Page
Figure 1.1: Outline for the Research Objectives, Research Questions and Hypotheses .....	4
Figure 2.1: Proposed Conceptual Framework .....	12
Figure 4.1. Development Model with Inner and Outer Paths .....	31
Figure 4.2 Inner and Outer Model Analysis .....	32
Figure 4.3 Research Final Model.....	33

## LIST OF ABBREVIATIONS

A	Mobile Commerce Adoption
AVE	Average Variance Extracted
CA	Cronbach's Alpha
CR	Composite Reliability
M-Comm	Mobile Commerce
M-Commerce	Mobile Commerce
PB	Perceived Benefits
PE	Perceived Barriers
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
UTAR	Universiti Tunku Abdul Rahman
VIF	Variance Inflation Factor

## PREFACE

This thesis is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration (Corporate Management). This thesis contains work done from April 2017 to August 2017. This thesis was supervised by Encik Mohd Nizam Bin A. Badaruddin and it was solely written by Mr. Tan Xi An.

## ABSTRACT

M-commerce is defined as a subset of e-commerce where any transaction with a monetary value is conducted in a wireless environment by using mobile devices. M-commerce is gaining more attention from both IS research community and business organizations. The focus of this study is to examine the factors affecting the adoption of mobile commerce among UTAR final year business undergraduate students. The study adopts the revised Technology Acceptance Model (TAM) by adding two antecedents which are perceived benefits and perceived barriers. Data have been collected from 200 university students using convenience sampling procedure and analyzed using Partial Least Square (PLS). Results show that perceived usefulness has the most significant influence on attitude toward using m-commerce, which is consistent with prior studies. Whereas the other three independent variables, they are found to be significantly influencing students' adoption decisions in M-commerce as well. Implications of the research findings and suggestions for future research are discussed.

Keywords: Mobile commerce, Technology Acceptance Model (TAM), Partial Least Square (PLS)

## **CHAPTER ONE: RESEARCH OVERVIEW**

### **1.0 Introduction**

In this chapter, it has been divided into six sections which are research background, problem statement, research objectives, research questions, significance of the study and chapter layout.

### **1.1 Research Background**

According to Ramirez-Correa, Rondan-Cataluna, and Arenas-Gaitan (2015), the rapid advancement and usage of wireless technology and e-commerce has led to the emergence of new electronic marketing concept identified as mobile commerce (m-commerce). Different definitions help to describe the phenomenon of mobile commerce. In the simplest way, Eastin, Brinson, Doorey, and Wilcox (2016) identified m-commerce as the application of wireless devices such as PDAS (personal digital assistance) and mobile phones to connect to the internet for communication purposes or carrying out business without physical or geographic restrictions.

Caught up with the emergence of mobile commerce to the electronic marketing systems, consumers and entrepreneurs are becoming familiarized with increasing issues concerning the ethical usages of protection of their privacy, consumer's personal data, and the serious impact which misuse could have on customer's final decisions to utilize the m-commerce (Eng, Hew, Koo, Soo, and Tan, 2012). Nitashi, Ibrahim, Mirabi, Ebrahimi, and Zare (2015) opined that whereas personal privacy and business ethics are no longer new issues in the business world, the rapid development

of the new usage of m-commerce and wireless technology is today bringing such issues to the limelight in this industry. Thus, it is the right time to understand issues regarding trust and privacy in the Malaysian context, which may become the drive to the use and acceptance of mobile commerce. A good platform is required to offer a new model of use and acceptance behavior of m-commerce.

## **1.2 Problem Statement**

Due to the latest advancement of mobile devices, m-commerce experiences rapid growth when putting into consideration of the capabilities of the mobile devices, their applications, services, network performance, and standards. Yadav, Sharma, and Tarhini (2016) explained that such rapid advancement of mobile technology and emergence of mobile commerce have been evidence in Malaysia. Thus, there has been relative better success concerning individual adoption of mobile commerce in Malaysia. The usage of m-commerce is rapidly becoming significant for students and businesses, including general consumers as a whole (Zhang, Zhu, and Liu, 2012). Thus, understanding how students are adopting m-commerce and how the service providers should offer m-commerce services are of significant importance (Garry, Keng-Boon, O., Siong-Choy, and Teck-Soon, 2014). However, whereas a significant number of studies have examined the use of e-commerce, the field of m-commerce, especially factors affecting students' adoption decisions in m-commerce has been unexplored. Students are identified as potential adopters of m-commerce, and now what is important is to understand factors influencing them to undertake m-commerce adoption. Therefore this study tries to bridge this gap and to make contribution to the m-commerce literature. This study aims to investigate the factors affecting UTAR final year undergraduate students' adoption decision in m-commerce adoption. The TAM model is applied to comprehend the relationship of perceived ease of use (PEOU), perceived usefulness (PU), perceived barriers (PE) and perceived benefits (PB) in relation to students' adoption in m-commerce.



The study aims to: (1) investigate the relationship between PEOU and UTAR final undergraduate towards m-commerce adoption; (2) the relationship between PU and UTAR final undergraduate students towards m-commerce adoption; (3) relationship between PB and UTAR final undergraduate students towards m-commerce adoption; and (4) relationship between PB and UTAR final undergraduate students towards m-commerce adoption.

## **1.3 Research Objectives**

### **1.3.1 General Objective**

The research objective is to investigate factors affecting student adoption decisions in m-commerce.

### **1.3.2 Specific Objectives**

RO1: To investigate the relationship between PEOU and UTAR final undergraduate towards m-commerce adoption.

RO2: To investigate the relationship between PU and UTAR final undergraduate students towards m-commerce adoption.

RO3: To investigate the relationship between PE and UTAR final undergraduate students towards m-commerce adoption.

RO4: To investigate the relationship between PB and UTAR final undergraduate students towards m-commerce adoption.

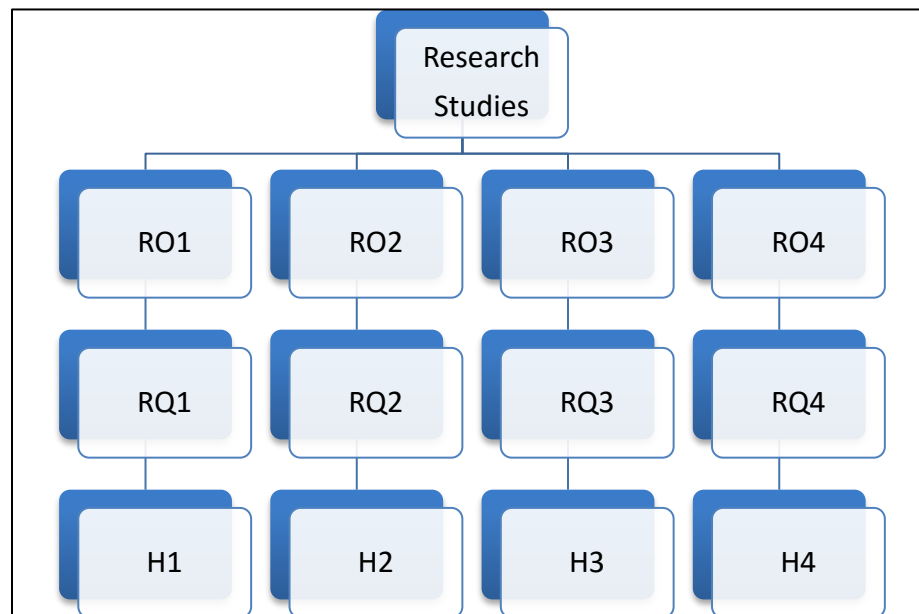
## 1.4 Research Questions

RQ1: What is the relationship between PEOU and UTAR final undergraduate students towards m-commerce adoption?

RQ2: What is the relationship between PU and UTAR final undergraduate students towards m-commerce adoption?

RQ3: What is the relationship between PE and UTAR final undergraduate students towards m-commerce adoption?

RQ4: What is the relationship between PB and UTAR final undergraduate students towards m-commerce adoption?



*Figure 1.1: Outline for the Research Objectives, Research Questions and Hypotheses*

## **1.5 Significance of the Study**

This study is important because it builds and validates factors which influence student adoption of m-commerce in Malaysia. In doing so, the study would develop understanding of the relationship between m-commerce and technology acceptance among students. The study helps to understand the factors which drive student adoption of the mobile commerce from student perspectives and investigates students' motivation for using mobile commerce.

## **1.6 Chapter Layout**

This study is structured in two sections: chapter one (introduction to the study) and chapter two (literature review). Chapter one gives highlights of the background of the study whereas chapter two investigates the research models and factors influencing students' adoption to m-commerce.

## **1.7 Conclusion**

This chapter highlights the pertinent issues regarding UTAR final year business undergraduate student's adoption decisions in mobile commerce. The next chapter (literature review) presents review of the past studies to understand factors affecting student's acceptance and adoption of mobile commerce.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.0 Introduction**

To understand student acceptance and adoption of mobile commerce, this study investigates two significant relationships. The TAM model is applied to investigate the influence perceived usefulness, perceived ease of use, perceived barriers, perceived benefits, and demographics on m-commerce when making decisions to adopt such a technology.

### **2.1 Review of the Literature**

#### **2.1.1 Perceived Ease of Use (PEOU)**

The perceived ease of use of a particular technology affects consumers' decision in rejecting or adopting the m-commerce technology (Krotov, Junglas, and Steel, 2015). Perceived ease of use refers to the level in which a consumer believes that using a new system would be of free of effort for the prospective adopters (Hsiao and Chen, 2015). Rakhi and Mala (2014) explained that PEOU is one of the key concerns for majority of consumers, particularly in the m-commerce adoption since there are many steps involved in the payment process that may be complex. Furthermore, the device is restrained by limited resolutions, slow text input facilities, short battery lifetime, and pocket-sized screens (Hew, Lee, Ooi, and Lin, 2016). However, m-commerce transactions are normally carried out in a simple wave, thus the inherent barriers in the credit card payment system is eliminated. Theoretically, Chen, Li, Chen, and Xu (2013) said that the greater perception

that m-commerce does not require much mental efforts to utilize; the more likelihood of consumers will have positive attitude towards m-commerce. A significant number of studies have recognized PEOU as having important impact on adoption decision in m-commerce (Chen, Chen, and Xu, 2013; Hsiao and Chen, 2015; Yang, 2005). Amin (2007) conducted a study on the m-commerce adoption in Malaysia confirms a similar evidence. This study explains that if m-commerce is easy to learn or easy to use, consumers will also perceive the payment method as useful and thus have higher likelihood to adopt it. Thus, the following hypothesis ensues:

H1: There is a relationship between PEOU and UTAR final year business undergraduate students towards m-commerce adoption

### **2.1.2 Perceived Usefulness (PU)**

Perceived usefulness is the level in which a student believes that using a specific system would enhance his or her work performance. According to Aik-Chuan, Garry, Keng-Boon, Teck-Son, and King-Tak (2015), in order for m-commerce to be accepted, the innovation must have more advantages when compared to credit card or cash payment. Chan and Chong (2013) recognize the benefits of m-commerce in reference to quicker checkout because signature is not required. Furthermore, the transaction is carried out via a wave-of-the phone, thus the cumbersome process of entering credit card numbers is avoided (Chen, Qi, and Zhou, 2012). In addition, Eastin, Brinson, Doorey, and Wilcox (2016) confirm the speed of the m-commerce where it is 6s faster than paypass cards. If customers believe that m-commerce can increase their productivity, then this would encourage usage (Chung, 2014). Therefore, it is hypothesized that PU would have a positive impact on the intention to adopt m-commerce. Thus, the following hypothesis is constructed:

H2: There is a relationship between PU and UTAR final year business undergraduate students towards m-commerce adoption

### **2.1.3 Perceived Barriers (PE)**

Past studies showed perceived barriers of a particular technology are regarded significant predictors of a student intention to use and adopt technology (Eng, Hew, Koo, Soo, and Tan, 2012). Such studies identified that a student's perceived barriers of a particular technology affect their adoption intentions and decisions to use the technology. Jun-Jie (2017) said that a hierarchical model was created to identify all barriers that affect the growth of mobile commerce in developing nations leading to a key concern which mobile usage is rising at a very high rate whereas m-commerce services remains basic. Liebana-Cabanillas, Sanchez-Fernandez, and Munoz-Leiva (2014) explained that innovation resistance is typically a reaction occurrence from a sensible choice and it is a resistance experienced by consumers to innovation because of potential deviations from a sufficient status quo or because it clashes with their belief system. Ram and Sheth (2012) developed innovation resistance theory (IRT) to explain why consumers resist may innovations. All barriers (usage barrier, value barrier, risk barrier, tradition barrier, image barrier, and perceived cost barrier) have negative relationship with the innovation of m-commerce. M-commerce past experience may have a positive or negative influence on the future m-commerce intention.

Chong, Chan, and Ooi (2012) identified that usage barrier is the resistance towards a new innovation because of inconsistency with current plan and routine. For example, deficiency in proficiency negatively affects the adoption of m-commerce (i.e. inability to write and read will restrict the adoption). Also, Lu (2014) opined that inefficiency of the mobile device negatively affects the adoption of m-commerce, and incompetency of the device affects

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the usage. In the United States, a web-based survey was collected to study 215 students. The study shows a negative relationship noticed between device inefficiency and m-commerce usage behaviors (Faqih and Jaradat, 2015). Deficiency in the incompetency and proficiency of device is associated with usage barriers and they negatively affect m-commerce adoption. According to Rakhi and Mala (2013), value barrier refers to a case whereby a user resists towards the usage of services or products when they do not meet their perception of performance-to-price value. This indicates that low perceived value negatively affects adoption intention of m-commerce. Risk barriers refer to the uncertainties that are inherent and involve innovations (Garry, Keng-Boon, Siong-Choy, and Teck-Soon, 2014). Perceived risks negatively affect the adoption of m-commerce. Chong (2013) viewed that traditional barriers are the obstacles caused when a new innovation create a change in consumer's established tradition. Traditional barriers negatively affect the adoption intention of m-commerce usage. Joubert and Van Belle (2013) identified that image barrier refers to the negative thought of users towards the innovation and perceived complexity of use. Image barrier negatively affects adoption intention of m-commerce (Eastin, Brinson, Doorey, and Wilcox, 2016). Lastly, perceived cost barrier are additional expenses incurred when wiring payment via m-commerce (Chong, 2013). Therefore, the following hypothesis can be constructed:

H3: There is a relationship between PE and UTAR final year business undergraduate students towards m-commerce adoption

#### **2.1.4 Perceived Benefits (PB)**

Past studies showed perceived benefits of a particular technology are regarded significant predictors of a student intention to use and adopt technology (Garry, Keng-Boon, Siong-Choy, and Teck-Soon, 2014). Such studies

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identified that a student's perceived benefits of a particular technology affect their adoption intentions and decisions to use the technology. Keng-Boon and Garry (2016) said that a hierarchical model was created to identify all barriers that affect the growth of mobile commerce in developing nations leading to a key concern which mobile usage is rising at a very high rate whereas m-commerce services remains basic.

Hew, Lee, Ooi, and Lin (2015) identified that perceived benefits of the new innovation come with enjoyment, usefulness, and free connection of the technology. Traditional business restricts enjoyment and usefulness by space-time, but in m-commerce environment, users get services by connecting with internet and thus the environment breaks the limits of time-space (Liebana-Cabanillas, Sanchez-Fernandez, and Munoz-Leiva, 2014). Consequently, users get services at any place and any time through mobile terminals like PDA and mobile phones. Maity and Dass (2014) explained that the advantage of ubiquity or free connection can significantly enhance efficiency of life and work and the freedom value of the user. Free connection implies freedom of mobile business knowledge acquisition and business relationship (Kucukcay and Benyououcef, 2014). Huang, E., Lin, and Fan (2015) stated that unrestricted trading and choice can occur between consumers, merchants and consumers, merchants and their business partners that mean the freedom of business procedure and improves consumers' trust of m-commerce. Hew, Lee, Ooi, and Lin (2016) identified that usefulness is attached by the value which perceived by the consumer when using a new innovation. Consumers evaluate their behavior outcomes based on the behavioral choice of the benefits of demand and perceived usefulness. Thus, it can be hypothesized that:

H4: There is a relationship between PB and UTAR final year business undergraduate students towards m-commerce adoption



## 2.2 Review of Relevant Theoretical Models

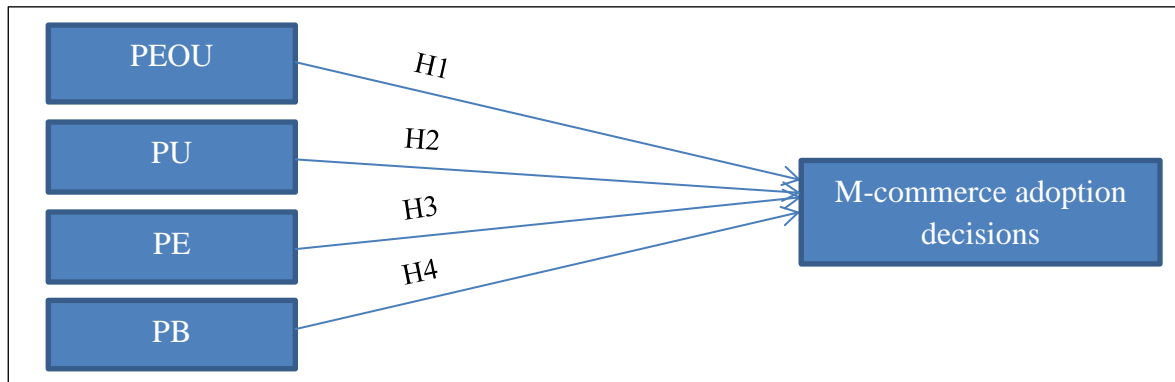
Over years, a significant number of frameworks have been created to understand users' intention to adopt certain information technology. Ying and Karyn (2014) opined that among such frameworks include theory of planned behavior (TPB), technology acceptance model (TAM), diffusion of innovation (DOI), and theory reasoned action (TRA). TRA focuses on explaining that the actual behavior of a person is determined by his or her behavioral intention, and such intention is influenced by her attitude and subjective norm towards behavior (Nitashi, Ibrahim, Mirabi, Ebrahimi, and Zare, 2015). TPB is regarded as an improvement to TRA, creating a third construct identified as perceived behavioral control to explain situational and cognitive resources required to perform a task.

Slade, Dwivedi, Piercy, and Williams (2015) viewed that just like TPB, TAM was adapted to model consumer's behavior and acceptance of new information systems. But it is believed to be more parsimonious than TPB or TRA. The TAM model was adapted from the TRA (theory of reasoned action). TRA is recognized as a weak predictor; thus the construct was consequently eliminated in the emergence of the revised TAM (Yang, Lu, Gupta, Cao, and Zhang, 2012). Now the TAM is a broadly accepted model which constitutes five key factors which determine an individual's intention to utilize a technology, perceived usefulness, perceived ease of use, perceived barriers, perceived benefits, and user demographics.

According to Chong (2015), since all the frameworks have their advantages and disadvantages; this study adopts the TAM including three additional variables, which are perceived usefulness, perceived ease of use, perceived barriers, perceived benefits, and user demographics. Slade, Dwivedi, Piercy, and Williams (2015) said that the TAM constructs perceived usefulness, perceived ease of use, perceived barriers, and perceived benefits are investigated with respect to a user's behavioral intention to adopt a technology by going through their key experiments to uncover any biases which may happen when using the TAM (Lin, Wang, and Lu, 2014).

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## 2.3 Proposed Conceptual Framework



*Figure 2.1: Proposed Conceptual Framework*

## 2.4 Hypotheses Development

H1: There is a relationship between PEOU and UTAR final year business undergraduate students towards m-commerce adoption

H2: There is a relationship between PU and UTAR final year business undergraduate students towards m-commerce adoption

H3: There is a relationship between PE and UTAR final year business undergraduate students towards m-commerce adoption

H4: There is a relationship between PB and UTAR final year business undergraduate students towards m-commerce adoption

## **2.5 Conclusion**

The review of the previous studies was examined in this chapter. From the reviewed previous studies, the research framework and hypotheses were created. Then the research methodology would be investigated in chapter three.

## **CHAPTER 3: METHODOLOGY**

### **3.0 Introduction**

This chapter consists of a review on the research design, data collection methods, sampling design, research instrument, measurement of constructs and data analysis techniques.

### **3.1 Research Design**

Research design is a framework that states the methods in collecting information and analyzing data (Burns & Bush, 2010). In the research designing process, it includes data collection and data analysis by using either qualitative or quantitative research method.

#### **3.1.1 Quantitative Research**

There are two types of common research method which are quantitative and qualitative research method (Kothari, 2004). In this research, quantitative research method has been used to investigate the developed hypotheses. This method uses numerical coding and statistical analysis to analyze the required information, provide in-depth information to the scope of study. In addition, Sekaran & Bougie (2010) stated that quantitative research method enables to identify the characteristics of an observed phenomenon and discover the correlations relationship between the variables.

## **3.2 Data Collection Methods**

The process of gathering information for the targeted variables in an organized method is known as data collection. Data can be divided into two main categories which are primary and secondary data.

### **3.2.1 Primary Data**

Primary data refers to the first-hand information that being collected from the target population which enables researchers to solve relevant questions and analyze results. Ackroyd and Hughes (1981) mentioned that primary data can be gathered through several techniques such as survey, interviews and direct observations and so on. The self-administered survey has been conducted to collect the data from the UTAR final year business undergraduate students. I attended Year 3 business subject classes to distribute the questionnaires and gathered them after their classes.

### **3.2.2 Secondary Data**

Schutt (2001) stated that secondary data was gathered by somebody else other than the researcher. In general, this data collection method is cheaper and data can be obtained more easily. Journals, published books, government departments are some of the secondary data examples. I have retrieved many relevant journals from ScienceDirect, JSTOR and SAGE for this research.

### **3.3 Sampling Design**

Kothari (2004) mentioned that sampling design is the process of selecting items from a population of interest so that by studying the sample one might make inferences on the target population. One might reasonably generalize the results back to the target population by analyzing the sample.

#### **3.3.1 Target Population**

Lavrakas (2008) stated that the target population for a survey is the whole set of elements for which the survey data are to be collected to make inferences. In this research, the target population is UTAR final year business undergraduate students. The reason for this study to focus on university students is because most of them own at least one mobile device and they are quick to adopt new technologies.

#### **3.3.2 Sampling Location and Sampling Elements**

Sampling location can be defined as the chosen place to carry out data collection. In this research, the targeted population is University Tunku Abdul Rahman final year business undergraduate students. The data collection has been done in UTAR Kampar, Perak. The questionnaires have been distributed to business administration, marketing and entrepreneurship UTAR final year undergraduates.

### **3.3.3 Sampling Technique**

Sampling technique can be divided into two main categories which are probability sampling and non-probability sampling. One of the non-probability sampling techniques, which is the convenience sampling has been conducted to collect data for interpretation. Since the target sample are UTAR final year business undergraduate students, this method is easy and suitable to gather the relevant information for data analysis.

### **3.3.4 Sampling Size**

According to Marsh, Balla, & McDonald (1988), a sample size of 200 or larger is appropriate to obtain reliable results. The total population of UTAR final year business undergraduates is around 1900 students. Therefore, I have distributed out 250 questionnaires to the target population and managed to get back 200 of them.

## **3.4 Research Instrument**

### **3.4.1. Questionnaire**

This method has been identified as the most appropriate data collection instrument in this survey. The questionnaire was invented by the Statistical Society of London in the year 1838. A questionnaire can be defined as a research instrument that consists of a series of questions and prompts in order to obtain gather information from the respondents (Gault, 1907).

Ackroyd and Hughes (1981) present some of the strengths of this instrument which include the fact that they are standardized in nature and thus will make it easy for the researcher to collect the relevant data and compile the collected data easily. Secondly, questionnaires make it possible to collect large amount of data within a very short time in a cost-efficient manner. This is made possible as each questionnaire is answered by the respondents differently and can be answered at the same time. Thirdly, they can be analyzed more scientifically and objectively as compared to other instruments of research.

There are two types of questionnaires, i.e. structured questionnaire and non-structural questionnaire. Hair, Babin, Money & Samouel (2003) argued that the structured questionnaire has high reliability in terms of reducing biasness and its ability to produce quantitative data easy for analysis. This study utilized the structured questionnaire.

### **3.4.2. Questionnaire Design**

Questionnaire design defines the kind of responses that the respondents will give and thus it is necessary to use a well-designed questionnaire in order to achieve the relevant information (Malhotra, 2002). The questionnaire questions are mainly adopted and modified to suit for this study. The questionnaire consists of 2 sections which are Section A and Section B.

Section A requested for respondents' demographic information, like gender, age, race and so on. The questionnaire has used ordinal and nominal scales for this section. On the other hand, Section B required respondents to indicate the extent to which he or she agreed or disagreed with each statement using 5 points Likert scale, which is an interval measurement.



Table 3.1: Summary of Questionnaire Design

<b>Section</b>	<b>Number of Questions</b>	<b>Questions</b>
<b>A</b>	7	Nominal and Ordinal Scales
<b>B</b>	20	Interval Scales

### **3.4.3. Pilot Test**

Pilot test was carried out to test the consistency and reliability of the questionnaire that has been designed for this study. Zikmund (2003) states that the questions should be tested in terms of sequence, wording, content and comprehensiveness before collecting the data in full scale. The reasonable sample size for pilot test is to collect data from twenty to thirty respondents (Zikmund 2003). Before distributing the questionnaire, it has been reviewed by my supervisor and some errors have been identified. After making the amendments, the questionnaire has been distributed to 20 UTAR final year business students. All the suggestions and feedbacks regarding to the questionnaire have been recorded for further improvement. The collected data was then interpreted by using SmartPLS 3 software to run the reliability analysis.

## 3.5 Constructs Measurement

### 3.5.1. Sources of the Questions

Table 3.2: Sources of the Questions

<b>Variables</b>	<b>Items</b>	<b>Descriptions</b>	<b>Sources</b>
<b>Perceived Ease of Use (PEOU)</b>	<b>PEOU1</b>	It will be easy for me to become skillful at using m-commerce.	Adapted and modified from Yap and Hii (2009)
	<b>PEOU2</b>	Mobile commerce is easy to use from any location at any time.	
	<b>PEOU3</b>	Using mobile commerce was entirely within my control.	
<b>Perceived Usefulness (PU)</b>	<b>PU1</b>	1.It is fashionable and trendy to use mobile commerce.	Adapted and modified from Yang (2005)
	<b>PU2</b>	2.The development of mobile commerce is a waste of resources.	
	<b>PU3</b>	3.Mobile commerce contributes to the betterment of life.	
<b>Perceived Barriers (PE)</b>	<b>PE1</b>	1.I feel mobile commerce is uneconomical.	Adapted and modified from Laukkanen, Sinkkonen, Kivijarvi (2007)
	<b>PE2</b>	2.I find that mobile commerce platforms are difficult to use.	
	<b>PE3</b>	3.I feel that I am at risk of identity theft when making mobile commerce transactions.	
	<b>PE4</b>	4.I would be charged more to use mobile commerce.	Adapted and modified from Spiripalawat, Thongmak and Ngramyarn

			(2011)
	<b>PE5</b>	5.I prefer to use physical forms of payment for my mobile commerce transactions.	Adapted and modified from Mahatanankoon and Ruiz (2007)
<b>Perceived Benefits (PB)</b>	<b>PB1</b>	1.I can use mobile commerce anywhere.	Adapted and modified from Lee and Lee (2007)
	<b>PB2</b>	2.I can use mobile commerce anytime.	
	<b>PB3</b>	3.I can have immediate access.	
	<b>PB4</b>	4.I feel secure using my own mobile phone	
<b>Mobile Commerce Adoption (A)</b>	<b>A1</b>	1.I intend to use mobile commerce.	Adapted and modified from Lian and Yen (2013)
	<b>A2</b>	2.I intend to learn how to use mobile commerce platform to perform my transaction.	
	<b>A3</b>	3.I intend to use mobile commerce services in future.	
	<b>A4</b>	4.I intend to use mobile commerce to perform retail transactions online more often.	Adapted and modified from Peng, Xu and Liu (2011)
	<b>A5</b>	5.I intend to recommend mobile commerce to my friends.	

### 3.5.2. Scale Measurement

Corcoran (2007) defines a construct as a group of observable or directly experienced phenomena and for this research they are observable or

experienced among the respondents. These observable characteristics are then grouped into different groups for measurement using different scales depending on the nature of the phenomena. This study uses two common scales of measurement in statistics.

#### **3.5.2.1. The Nominal Scale**

This scale is used to categorize data without any specific rank order. Common variables in this study category include the race, culture, gender and age.

#### **3.5.2.2. The Interval Scale**

This scale is used to give order to the items mentioned in the questionnaire and they are designed to possess equal intervals. In this research the 5 point scale has been used to indicate the extent to which the respondent agrees or disagrees with the variable mentioned.

### **3.6 Data Processing**

Data Processing is defined as the process concerned with the editing, coding, classifying, tabulation and charting of research data in order to weed out irrelevant data from the relevant data. It is mainly done to achieve complete, accurate, and the ensuring that the data filled by the relevant respondents.

The first step in data processing is checking the questionnaire to ensure that all the data collected is complete, making sure all the questions are filled up and all pages are intact.

The second step is editing the questionnaires to remove any form of ambiguity and remove any questionnaires with inconsistent responses.

The third step is encoding in which the responses given are assigned a numerical value in order to make it easy to interpret them and for comparison on how close or how far the variables are from each other.

After coding, the fourth step in data processing is transcribing. In this step the data is entered into the computer in either tables, or in excel sheets for easy interpretation.

Lastly, the data collected undergoes cleaning which involves checking the data entered into computer and conforming consistency with the hard copy in order to avoid cases of missing entries.

## **3.7 Data Analysis**

Shamoo and Resnik (2003) defined data analysis as the process of systematically applying statistical techniques to describe, illustrate and evaluate data. The aim of data analysis is to produce a meaningful information that can be used to produce inductive inferences and conclusions. This research will utilize three types of data analysis, i.e descriptive analysis, scale measurement and inferential analysis.

### **3.7.1 Descriptive Analysis**

Descriptive analysis is a short summary of coefficients that are used to summarize a given data set which can either be a representation of the entire population or a sample of the population. The common techniques of descriptive analysis that will be used in this research include the central tendency and the frequency of distribution. The central tendency is used to

determine the mode, median and mean of the data generated. In this study the central tendency has been used to describe the trend in the demographic profile of the respondents in the research.

### **3.7.2 Reliability Analysis**

Reliability analysis is carried out to ensure that the data for analysis is free from any form of biasness. It is used to standardize the data to ensure that all the gathered data meets the criteria of a quality research that will lead to conclusion that reflect the nature of the respondents (Zikmund, 2003). The most common types of reliability tests include Test-retest, parallel form and internal consistency reliability test. For this study consistency test has been chosen as the most appropriate to determine the consistency of the data before proceeding to statistical analysis of the generated data. This test has an alpha ( $\alpha$ ) coefficient which ranges from 0 to 1. Any data that gets a score of 0.6 and above is considered as reliable whereas a below 0.6 score is considered unreliable for statistical analysis (Cronbach and Shavelson, 2004).

### **3.7.3 Inferential Analysis**

The inferential analysis is used to draw conclusions about the target population. The results obtained are used to infer how weak or how strong the independent variables are close to the dependent variable (Gabrenya, 2003). Pearson Correlation Coefficient Analysis and Multiple linear regression are used to determine how close the independents are to the dependent variables. Malhora and Peterson (2006) indicated that the Pearson correlation coefficient analysis (represented by symbol  $r$ ) is used to determine the strength and direction between the variables in a research study. The coefficient values lie between  $-$  to  $+$ , with a negative indicating a lesser relationship while the positive indicating a very close relationship between the variables. On the

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other hand, the Multi Linear regression (MLR) is used to test the variables as identified in chapter 2 above. MLR is used to indicate the relationship and direction between the independent variables and the dependent variables.

### **3.7.4 Normality analysis**

This type of analysis is used to determine if the target population is normally distributed in order to give a clear representation of the larger population under study. In this study, the normality of the data is examined through skewness and kurtosis value of each items used in variables. According to Bryne (2010), the variables is said to be normally distributed if the skewness and kurtosis value is between the range of  $\pm 2$  and  $\pm 7$  respectively. The distribution is said to be positively skewed if the value of the skewness is positive and vice versa.

## **3.8 Conclusion**

Research methodology provides a clear guideline on how to conduct a research within the regulations of research methodology and with the aim of achieving reliable research outcomes. This chapter has focused on the research design, research methods, sampling procedure, research instruments, and constructs of measurement, data processing and data analysis.

## **CHAPTER 4: DATA ANALYSIS**

### **4.0 Introduction**

In the previous chapter, research design, data collection method, sampling design, research instrument, construct measurement, data processing and the data analysis methods have been discussed. This chapter discusses the results of the different analysis methods that have been carried out using Smart PLS 3 statistical analysis software.

### **4.1 Descriptive Analysis**

#### **4.1.1 Respondent Demographic Profile**

##### **4.1.1.1 Gender**

Table 4.1 illustrates the respondent demographic information. As shown in the table below, out of the 200 valid respondents, there are 104 male respondents, which constitutes 52 per cent of the total respondents; whereas female respondents are 96 persons, which constitutes 48% of the total respondents.

Table 4.1: Gender

<b>Gender</b>	<b>Frequency</b>	<b>Per cent</b>
<b>Male</b>	104	52
<b>Female</b>	96	48
<b>Total</b>	200	100



#### 4.1.1.2 Age

From the Table 4.2, it shows 196 of the respondents are from the age group of 18-25 years old, which constitutes 98 per cent of the total respondents. On the other hand, there is only 4 respondents who are between the age group of 26-35 years old, which contributes to 2 per cent of the overall respondents.

Table 4.2: Age

<b>Age</b>	<b>Frequency</b>	<b>Per cent</b>
<b>18-25 years old</b>	196	98
<b>26-35 years old</b>	4	2
<b>35-45 years old</b>	0	0
<b>Total</b>	200	100

#### 4.1.1.3 Cultural Heritage

As illustrated by the Table 4.3, most of the respondents are Chinese with 196 of them, which constitutes 98 per cent, then followed by 1 Malay and 3 Indians.

Table 4.3: Cultural Heritage

<b>Cultural Heritage</b>	<b>Frequency</b>	<b>Per cent</b>
<b>Chinese</b>	196	98.0
<b>Malay</b>	1	0.5
<b>Indian</b>	3	1.5
<b>Others</b>	0	0
<b>Total</b>	200	100.0

#### 4.1.1.4 Marital Status

From the Table 4.4, it is clear that 197 of the respondents are single, which constitutes 98.5 per cent of the total respondents, while there are only 3 who are married.

Table 4.4: Marital Status

<b>Marital Status</b>	<b>Frequency</b>	<b>Per cent</b>
<b>Single</b>	197	98.5
<b>Married</b>	3	1.5
<b>Total</b>	200	100

#### 4.1.1.5 Highest Education Completed

The Table 4.5 shows the highest level of education respondents have completed. Based on the data collected, 92 (46%) respondents have completed foundation course while 46 (23%) respondents have other education qualifications. It is followed by 31 (15.5%) respondents have completed STPM, 19 (9.5%) people have completed UEC and 12 (6%) persons who have completed a diploma course.

Table 4.5: Highest Education Completed

<b>Highest Education Completed</b>	<b>Frequency</b>	<b>Per cent</b>
<b>UEC</b>	19	9.5
<b>STPM</b>	31	15.5
<b>Diploma</b>	12	6.0
<b>Foundation</b>	92	46.0
<b>Others</b>	46	23.0
<b>Total</b>	200	100.0

#### 4.1.1.6 Monthly Allowance

The Table 4.6 depicts the respondents' monthly allowance. There are 168 students who are getting RM500-RM1,000 per month as their allowance, which constitutes 84 per cent of the total respondents. It is followed by 23 students under category of RM1,001-RM2,000 and 9 students who receive RM2,000 and above as their monthly allowance.

Table 4.6: Monthly Allowance

<b>Monthly Allowance</b>	<b>Frequency</b>	<b>Per cent</b>
<b>RM500-RM1,000</b>	168	84.0
<b>RM1,001-RM2,000</b>	23	11.5
<b>RM2,000 Above</b>	9	4.5
<b>Total</b>	200	100

#### 4.1.1.7 Purchase Frequency

The Table 4.7 illustrates majority of the students who have purchased through mobile device are under the category of 1-3 times, which constitutes 98 respondents (49%). It is followed by 42 students (21%) who have not done any purchase through mobile device before. There are 30 students (15%) who have responded that they have bought 4-6 times and another 30 students responded that they bought 7 times and above through mobile device.

Table 4.7: Purchase Frequency

<b>No. of Purchase(s)</b>	<b>Frequency</b>	<b>Per cent</b>
<b>None</b>	42	21
<b>1-3</b>	98	49
<b>4-6</b>	30	15
<b>7 above</b>	30	15
<b>Total</b>	200	100

## **4.2 Confirmatory Factor Analysis**

Suhr (2006) stated that confirmatory factor analysis is a statistical method used to examine the factor structure of a group of observed variables. It enables the researcher to test the hypothesis that a relationship between observed variables and their latent constructs exists (Suhr, 2006). SmartPLS 3 software was used for this research. Henseler, Ringle and Lages (2009) stated that Partial Least Squares (PLS) is a path model that can be described by two groups of linear equations which is divided into an inner and outer model.

### **4.2.1 Creation of Inner and Outer Model Analysis**

The outer model comprises of 12 items of which Perceived Ease of Use had 3 items, Perceived Usefulness had 2 items, Perceived Barriers had 3 items and Perceived Benefits had 4 items; while inner model consists of 5 items.

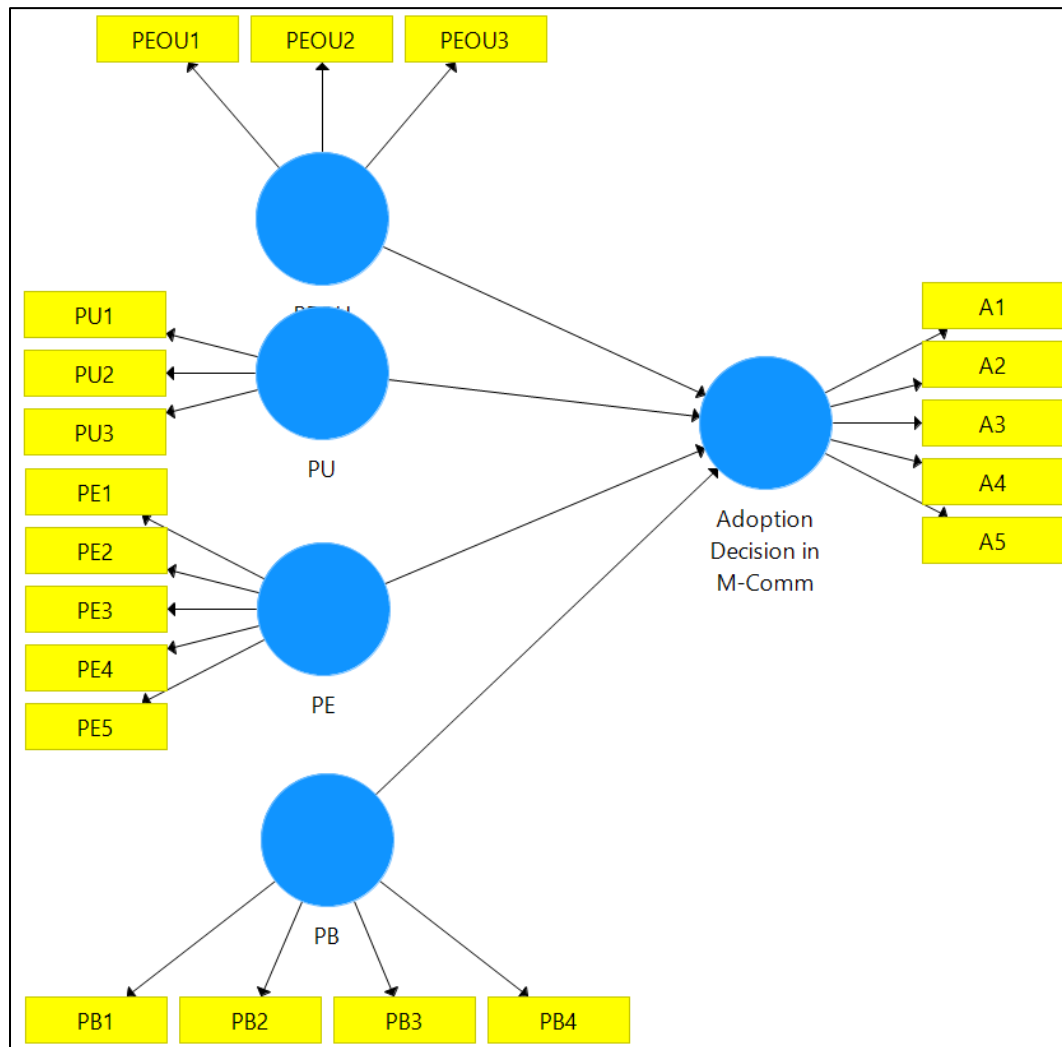
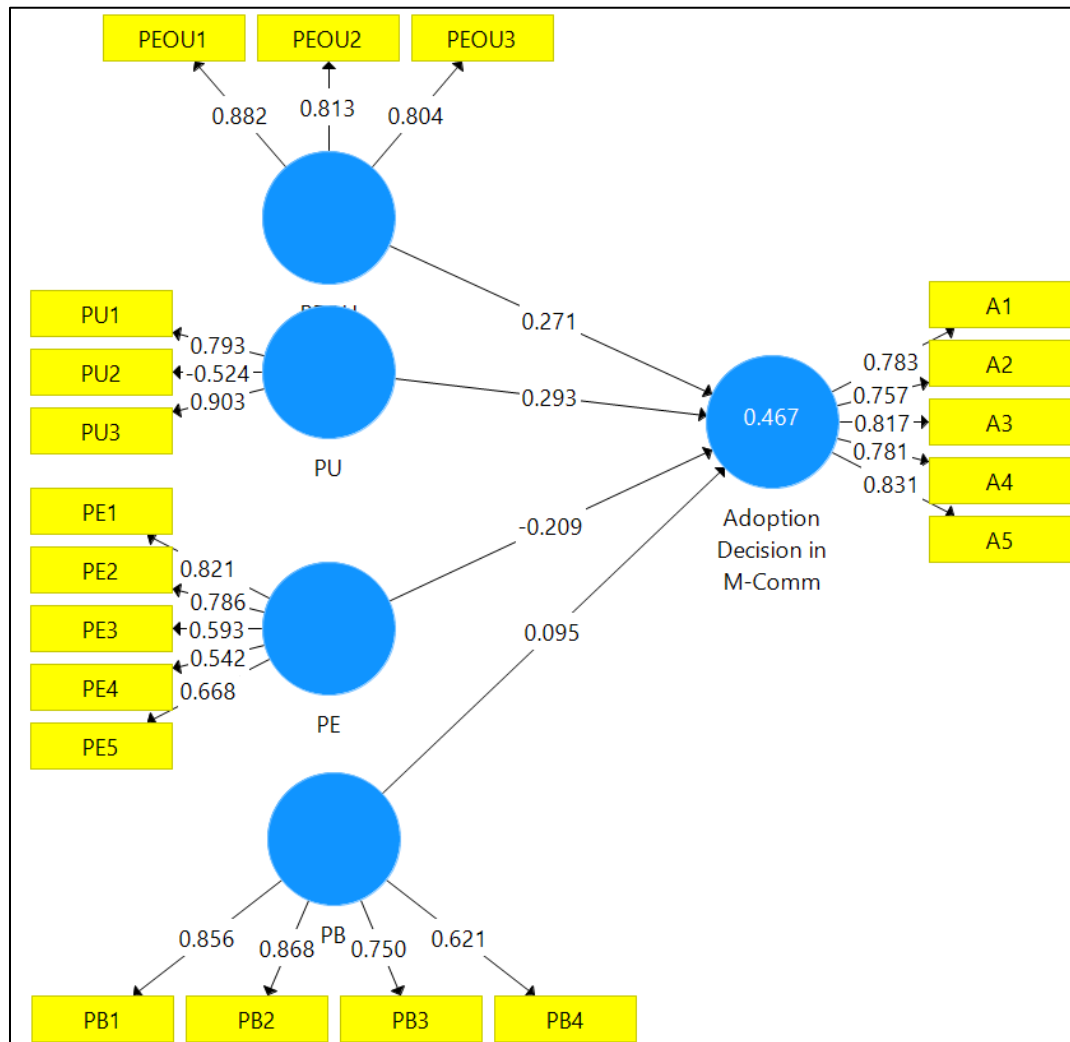


Figure 4.1. Development Model with Inner and Outer Paths

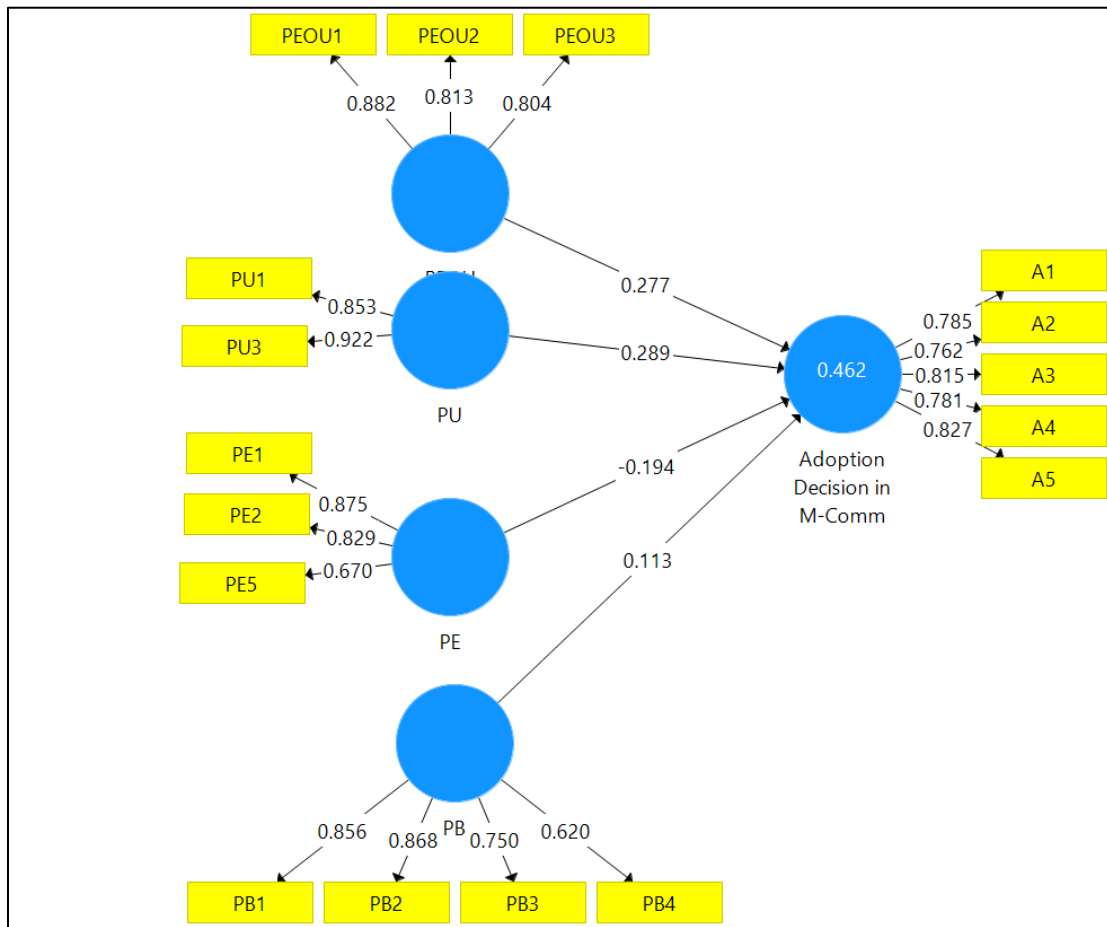
## 4.2.2 Inner and Outer Model Analysis



*Figure 4.2: Inner and Outer Model Analysis*

The Figure 4.2 shows that PU2 (0.524), PE3 (0.593) and PE4 (0.542) are lower than 0.6. Therefore, the removal of the 3 items which are below of the acceptable levels are necessary. After removing some of the items in the outer model would alter the path values.

### 4.2.3 Research Final Model



*Figure 4.3: Research Final Model*

Based on the Figure 4.3 above, all the path coefficients show a positive value, except the path for Perceived Barriers (PE) to Adoption Decision in M-Comm (-0.194). The negative figure of -0.194 indicates PE has a negative influence on students' adoption decision in mobile commerce, while the other independent variables PEOU, PU and PB have positive impacts on students' adoption decisions in mobile commerce.

## 4.3 Scale Measurement

### 4.3.1 Normality Analysis

Table 4.8 illustrates the normality test output for the research. According to the Brown (1997), the data set used in the study are normally distributed when either skewness and kurtosis values is close to zero. Since the skewness values are between the range of  $\pm 2$  while all the kurtosis value for the variables are between  $\pm 5$ , the data set can be considered as normally distributed.

Table 4.8: Normality Test

Variables	N	Excess Kurtosis	Skewness
PEOU1	200	4.513	-1.52
PEOU2	200	2.621	-1.128
PEOU3	200	0.033	-0.471
PU1	200	-0.246	-0.256
PU2	200	1.015	1.137
PU3	200	2.228	-0.790
PE1	200	0.140	0.571
PE2	200	1.558	1.046
PE3	200	0.318	-0.672
PE4	200	-0.855	0.21
PE5	200	-0.318	0.106
PB1	200	4.514	-1.112
PB2	200	1.710	-0.599
PB3	200	1.044	-0.632
PB4	200	-0.610	-0.117
A1	200	0.331	-0.288
A2	200	0.695	-0.367
A3	200	1.134	-0.095



<b>A4</b>	200	0.164	-0.376
<b>A5</b>	200	-0.438	-0.228

Source: Developed for the research

### 4.3.2 Reliability Test

Table 4.9 depicts the internal consistency reliability analysis test results. Cronbach's Alpha (CA) test has been carried out to verify the reliability of the data collected. The CA values for the measurement of the model shows a value range between 0.713 for Perceived Barriers (PE) to 0.0.854 for Adoption Decision in M-Comm (A). CA measurement values which above 0.7 are considered to be reliable (Sekaran and Bougie, 2010). Therefore, the CA result of the 5 constructs above has illustrated that they are statistically significant.

Composite Reliability (CR) is the following analysis being conducted. According to Diamantopoulos and Siguaw (2000), the recommended value for CR is 0.7 and above. The analysis done showing the CR for each construct ranges between 0.837 for PE to the highest construct CR values which is A at 0.895. Therefore, all the study's constructs are above the minimum CR acceptable value which is 0.7 as suggested (Diamantopoulos and Siguaw 2000).

**Table 4.9: Reliability Analysis**

<b>Variables</b>	<b>No. of Items</b>	<b>Cronbach's Alpha (CA)</b>	<b>Composite Reliability (CR)</b>	<b>Average Variance Extracted (AVE)</b>
<b>IV: Perceived Ease of Use (PEOU)</b>	3	0.780	0.872	0.695
<b>IV: Perceived Usefulness (PU)</b>	2	0.737	0.882	0.789
<b>IV: Perceived Barriers (PE)</b>	3	0.713	0.837	0.634
<b>IV: Perceived Benefits (PB)</b>	4	0.777	0.860	0.609
<b>DV: Adoption Decision in M-Comm (A)</b>	5	0.854	0.895	0.631

Source: Developed for the research

### 4.3.3 Validity Analysis

Fornell and Larcker (1981) stated that Average Variance Extracted (AVE) is a measure of the amount of variance that is captured by a construct in relation to the amount of variance due to measurement error. It is also suggested to compare the correlation of the construct with the square root of AVE (Fornell and Larcker 1981). The discriminant validity is assured when the value of the AVE is above the threshold value of 0.50 and the square root of the AVEs is larger than all other cross-correlations. Table 4.9 shows that the AVE ranged from 0.609 to 0.789 and there is not any correlation between the constructs greater than the squared root of AVE. Hence, the reliability and validity of the constructs in the model are achieved.

Table 4.10: Fornell-Larcker Criterion

	<b>Adoption Decision in M-Comm (A)</b>	<b>Perceived Benefits (PB)</b>	<b>Perceived Barriers (PE)</b>	<b>Perceived Ease of Use (PEOU)</b>	<b>Perceived Usefulness (PU)</b>
<b>Adoption Decision in M-Comm (A)</b>	<b>0.794</b>				
<b>Perceived Benefits (PB)</b>	0.475	<b>0.780</b>			
<b>Perceived Barriers (PE)</b>	-0.437	-0.277	<b>0.796</b>		
<b>Perceived Ease of Use (PEOU)</b>	0.584	0.582	-0.429	<b>0.834</b>	
<b>Perceived Usefulness (PU)</b>	0.560	0.507	-0.32	0.548	<b>0.888</b>

Source: Developed for the research

Hulland (1999) stated that only items with individual factor loadings above 0.6 should be retained. As shown in Table 4.11, the factor loadings range is between 0.620 to 0.922, thus all items should be remained. The significant loading of all the items on the single factor indicates convergent validity, while the fact that no cross-loadings items were found supports the discriminant validity of the instrument.

Table 4.11: Item Factor Loading Output

	<b>Original Sample (O)</b>
<b>A1 &lt;- Adoption Decision in M-Comm</b>	0.785
<b>A2 &lt;- Adoption Decision in M-Comm</b>	0.762
<b>A3 &lt;- Adoption Decision in M-Comm</b>	0.815
<b>A4 &lt;- Adoption Decision in M-Comm</b>	0.781
<b>A5 &lt;- Adoption Decision in M-Comm</b>	0.827
<b>PB1 &lt;- PB</b>	0.856
<b>PB2 &lt;- PB</b>	0.868

<b>PB3 &lt;- PB</b>	0.750
<b>PB4 &lt;- PB</b>	0.620
<b>PE1 &lt;- PE</b>	0.875
<b>PE2 &lt;- PE</b>	0.829
<b>PE5 &lt;- PE</b>	0.670
<b>PEOU1 &lt;- PEOU</b>	0.882
<b>PEOU2 &lt;- PEOU</b>	0.813
<b>PEOU3 &lt;- PEOU</b>	0.804
<b>PU1 &lt;- PU</b>	0.853
<b>PU3 &lt;- PU</b>	0.922

Source: Developed for the research

## 4.4 Inferential Analysis

### 4.4.1 Path Coefficients Analysis

As shown in Table 4.12, PB, PEOU and PU have shown a positive value, which were 0.113, 0.277 and 0.289. However, PE has a negative path coefficient of -0.194 which indicates the causal relation between PE and A is negative. In addition, the T Statistic for all the independent variables are above 1.96 and all the P values are less than 0.05, thus all the variables are statistically significant at 95% confidence level (Hulland 1999).

**Table 4.12: Path Coefficient Analysis**

<b>Independent Variables</b>	<b>Path Coefficients</b>	<b>T Statistics</b>	<b>P Values</b>
<b>Perceived Benefits (PB)</b>	0.113	1.981	0.047
<b>Perceived Barriers (PE)</b>	-0.194	3.776	0.000
<b>Perceived Ease of Use (PEOU)</b>	0.277	3.815	0.000
<b>Perceived Usefulness (PU)</b>	0.289	4.324	0.000

Source: Developed for the research

#### **4.4.2 Coefficient of Determination (R square)**

R-squared is a statistical measure of how close the data are to the fitted regression line (Hulland 1999). The R square value refers to the percentage of the dependent variable variation that can be explained by the independent variables. For this study, the R square value is 0.462 which indicates that 46.2% of the variations in dependent variable (Adoption) can be explained by the four independent variables used in the research (Perceived Benefits, Perceived Ease of Use, Perceived Usefulness and Perceived Barriers). However, there is still another 53.8% unexplained by the model used which indicated that there are still other additional factors that can affect the UTAR final year business undergraduate students' adoption decisions in mobile commerce.

**Table 4.13: Residual Analysis**

	<b>R Square</b>
<b>Adoption Decisions in M-Comm</b>	0.462

Source: Developed for the research

### 4.4.3 Collinearity Assessment

Ringle, Wende and Becker (2015) mentioned that Variance Inflation Factor (VIF) is an appropriate tool in justifying the multicollinearity of the model. As a rule of thumb, VIF value should be between 1 to 5 (Ringle, Wende and Becker 2015). The higher the value, the higher the multicollinearity. As shown in Table 4.14, all the independent variables are within the range of 1 to 5, which means they are still within acceptable range.

Table 4.14: Variance Inflation Factors (VIF)

<b>Independent Variables</b>	<b>Adoption Decision in M-Comm</b>
<b>Perceived Benefits (PB)</b>	1.638
<b>Perceived Barriers (PE)</b>	1.241
<b>Perceived Ease of Use (PEOU)</b>	1.898
<b>Perceived Usefulness (PU)</b>	1.565

Source: Developed for the research

## 4.5 Conclusion

From the above chapter the research findings and analysis have been clearly conducted. Notably the research findings confirm to the previous studies conducted and the indication of a positive relationship with the hypotheses developed. The next chapter will look at the conclusions and implications of this study.

## **CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS**

### **5.0 Introduction**

Chapter 5 will be discussed on the summary of the descriptive and inferential analysis output. In addition, implications & limitations of the study as well as some future recommendations for the study will also be included in this chapter.

### **5.1 Summary of Statistical Analyses**

The total number of questionnaires being collected for the study is 200 copies. The summary of the results as follows:

#### **5.1.1 Description Analysis**

This study was based on 200 valid respondents, whereby 79% of them have purchased at least once through their mobile device, while 21% of the students has no experience before. There are 104 male respondents, which constitutes 52% of the total respondents; whereas female respondents are 96 persons, which constitutes 48% of the total respondents. Out of the 200 respondents, 196 respondents were from the majority age group of 18-25 years old, which constitutes 98 per cent of the total respondents. On the other hand, there is only 4 respondents who are between the age group of 26-35 years old, which contributes to 2 per cent of the overall respondents. In addition, 98% of the respondents are Chinese which constitutes 196 of them, then followed by 1

Malay and 3 Indians. Up to 98.5% of the respondents are single. Based on the data collected, 46% of the respondents have completed foundation course while 23% respondents have other education qualifications and it was followed by STPM, UEC and Diploma courses. There were 168 students who are getting RM500-RM1,000 per month as allowance, which comprises 84% of the respondents.

### **5.1.2 Normality Analysis**

According to the skewness and kurtosis value obtained from the normality test, all the variables used in the study are normally distributed since the skewness value is between  $\pm 2$  whereas the kurtosis value is between the range of  $\pm 7$ .

### **5.1.3 Reliability and Validity Analysis**

Cronbach's Alpha and Composite Reliability constructs' measurement values are above the recommended value of 0.7, while AVE ranged from 0.609 to 0.789 and there is not any correlation between the constructs greater than the squared root of AVE. Hence, the results have shown that the reliability and validity of the constructs in the model are achieved.

### **5.1.4 Inferential Analysis**

PB, PEOU and PU have shown a positive value, which were 0.113, 0.277 and 0.289. However, PE has a negative path coefficient of -0.194 which indicates the causal relation between PE and A is negative. In addition, the T Statistic



for all the independent variables are above 1.96 and all the P values are less than 0.05, thus all the variables are statistically significant at 95% confidence level. For this study, the R square value is 0.462 which indicates that 46.2% of the variations in dependent variable (Adoption) can be explained by the four independent variables used in the research (Perceived Benefits, Perceived Ease of Use, Perceived Usefulness and Perceived Barriers). As for the Variance Inflation Factor (VIF) test, all the independent variables are within the range of 1 to 5, which means they are moderately correlated.

## **5.2 Discussions of Major Findings**

From the above reliability test indicates that all the variables used in the study are reliable. According to Sekaran and Bougie (2010), for the variables to be reliable they must have a minimum reliability of 0.7 for them to be considered as reliable. In the study all the variable scored a reliability of more than 0.75. Therefore, in the study the variables were reliable had the ability for the study to proceed to the next level of study.

### **H1: There is a significant relationship between PEOU and UTAR final undergraduate towards m-commerce adoption**

The first variable is the Perceived ease of use. The hypothesis 1 was accepted in this study since its P-value is less than 0.05. There was a very close relationship between the perceived ease of use and the use of m-commerce. Hsiao and Chen (2015) defined the perceived ease of use as to the level in which the consumers believe that the use of a new system would be free of effort for the prospective adopters. Ideally this study proves that if m-commerce is ease to learn and use, consumers will also perceive the payment method as useful and thus they will use it. Among other several factors that the users consider for them to perceive the m-commerce ease to use include the registration process for the m-commerce system. A more complex

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registration process scares off the users. A study carried out in 2013 in France stressed on a friendly user interface, system operation and functioning as the key pillars for wide user acceptance of mobile payment system (Dutot, 2015).

**H2: There is a significant relationship between PU and UTAR final undergraduate students towards m-commerce adoption.**

The hypothesis 2 was accepted in this study since its P-value is less than 0.05. Perceived usefulness had a greater impact on the students' adoption decision in m-commerce. The respondents considered it more fashionable and trendy using mobile commerce as a payment system. They also indicated that the use of mobile commerce contributed to a better life than the manual payment system. Other factors that have been focused on by other researchers is the fact that m-commerce has a quicker checkout systems as it does not require signing of documents unlike the manual payment systems (Chan & Chong, 2013). Chen and Zhou (2012) indicated that the mobile payment system is adopted more due to the fact that the user does not have to enter the credit card numbers into the system, some of these numbers are very long. Eastin et. al. (2016), also found out that the adoption of m-commerce was higher because it was 6 times faster than the normal credit payment system.

**H3: There is a significant relationship between PB and UTAR final undergraduate students towards m-commerce adoption.**

The hypothesis 3 was accepted in this study since its P-value is less than 0.05. The barriers that were identified as key factors in the adoption of the m-commerce include the risk of identity theft when making m-commerce transactions, fear of extra costs incurred in using mobile commerce, and the difficult to use the ecommerce platforms. The higher the system performs in these factors the lower the level of adoption. This finding is consistent with other research studies that have been done before. A study conducted in the year 2007 by Laukkanen et.al (2007) indicated that all barriers either functional or psychological have a significant negative impact on the mobile

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commerce adoption. In another study by Laukkenen & Kiviniemi (2010) at Finland which had 1551 samples using a questionnaire survey indicated that barriers negatively affect the intention to adopt mobile banking.

**H4: There is a significant relationship between PB and UTAR final undergraduate students towards m-commerce adoption**

The hypothesis 4 was accepted in this study since its P-value is less than 0.05. The questionnaire indicates positivity on the test criteria in the perceived benefits. Some of the factors that were tested included ease accessibility, use of mobile commerce without any geographical limitations, the respondents also felt more secure using their mobile phones when making the payments. These findings were closely associated with previous studies conducted by other researchers such as Hew, Lee, Ooi, and Lin (2015), which identified that new innovations often comes with more advantages than the traditional payment systems. In this regard, they identified that the innovations come with enjoyment, usefulness and free connection to technology. Liebana-Cabanillas et. al (2013) argued that traditional businesses restricted enjoyment and usefulness by space-time but with m-commerce users get services with the internet and thus the environment breaks the time and space limits.

### **5.3 Implications of the Study to Public and Private Policy**

This study focused on the factors affecting adoption of the mobile commerce system among the students of UTAR in Malaysia. There are several researches that have focused on the factors affecting specific technologies but very few have focused on the mobile commerce system. Therefore, this research contributes greatly to the world of literature in helping other researchers' access literature for reference in their research studies. Of particular importance is the Technology Acceptance Model (TAM) that has been deployed in this study. This framework has not been deployed by many researchers in understanding the factors that contribute or hinder acceptance

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of new technology in a society. Therefore, this research sets a great milestone for future researchers and for the technology professionals.

### **5.3.1 Managerial Implications**

As technology evolves businesses struggle to find cheaper and easily accessible means of providing their services to the customers. One of the sectors that has gone through great changes is the banking sector where in the current world people have adopted cheaper means of keeping their money in a secure and easily accessible manner. Businesses have also introduced cheaper means of payment for services and goods hence the ecommerce phenomenon. With this growth, it has become necessary for businesses such as banks to come up with secure methods of making payments online. However, for them to understand the most appropriate system to introduce they need to understand their users and the factors that affect the adoption or rejection of a new online payment system. Therefore, this research is a key milestone in helping the businesses to consider the factors discussed above in coming up with the appropriate mobile commerce system.

Studying consumer behavior is a key aspect before setting up any business. This study has focused on the behavior of the Malaysian community in terms of adopting the mobile commerce system. Some factors that businesses should be aware of include the perceived barriers which hinder the adoption of the mobile commerce. Therefore, businesses should focus on handling the barriers before they roll out the m-commerce payment system which the users may consider as a great hindrance to their adoption of the mobile commerce system.

## **5.4 Limitations of the Study**

There are very few limitations for this study. Firstly, the respondents of the study were the final year students of UTAR. Due to time and resource constraints, there were 200 respondents which is not enough to represent the entire population of Malaysia. Also, the age is concentrated on the below 40 years and thereby not giving a true representation of the entire Malaysia population. Therefore, the conclusions from this study may not apply to the general Malaysian population.

Secondly there were very few studies on mobile commerce adoption in Malaysia. The majority of the studies and journals that were used as referrals in this study came from other countries. Therefore, they may not have given an ideal picture of the research findings in relation to the context of Malaysia.

Thirdly, this study focused on the TAM model in analyzing the factors that influence mobile commerce adoption in Malaysia. However, there may be other factors that may not have been captured in the TAM model. Therefore, the factors discussed in this study are limited to the TAM model factors.

## **5.5 Recommendations for Future Research**

Future researchers are encouraged to carry out research on a large population so that to give a clear representation of the entire Malaysian population. With a focus on a larger population the conclusions deducted from the study can be used to give a clear view of the Malaysian population.

Secondly, the researchers should explore other additional factors that affect the mobile commerce adoption. The TAM models and other technology acceptance models should not be used as the baseline limit in carrying out the stud on the

technology acceptance factors. They should be able to explore other additional factors so that they can come up with new models that can give clear image of the factors affecting mobile commerce adoption.

## **5.6 Conclusion**

The main objective of this study was to investigate factors affecting UTAR final year business students' adoption decisions in M-commerce. The TAM model was deployed in this study to predict the outcome. The findings show a significant relationship between the independent variables (perceived ease of use, perceived benefits, perceived barriers, and perceived usefulness) and the students' adoption decisions in m-commerce. This study can be very beneficial to both the business entities and governments in helping making them decision on the best systems of mobile commerce to adopt.

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**APPENDIX**

**A Study on the Factors Affecting Universiti Tunku Abdul Rahman (UTAR) Final Year Business Undergraduate Students' Adoption Decisions in Mobile Commerce**

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Dear respondent,

I am a final year undergraduate student of Business Administration, from University Tunku Abdul Rahman (UTAR). The purpose of this survey is to identify the factors affecting Universiti Tunku Abdul Rahman (UTAR) final year business undergraduate students' adoption decisions in mobile commerce.

Thank you for your participation.

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Instruction:

1. There are FIVE (5) pages in this questionnaire. Please answer ALL questions which are needed in ALL pages.
2. Completion of this questionnaire will take you approximately 5 to 10 minutes.
3. The content of this questionnaire will be kept strictly confidential and will be used only for academic research purpose.

## Section A: Demographic Profile

*In this section, we are interested in your background in brief. Please tick your answer and your answer will be kept strictly confidential.*

1. Gender :  Male  
 Female
2. Age :  18 – 25 years old  
 26 – 35 years old  
 35 – 45 years old
3. Cultural Heritage :  Chinese  
 Malay  
 Indian  
 Others
4. Marital Status :  Single  
 Married
5. Highest Education Completed :  UEC  
 STPM  
 Diploma  
 Foundation  
 Others
6. How much is your monthly allowance? :  RM500-RM1,000  
 RM1,001-RM2,000  
 RM2,001 ABOVE
7. How many online purchase(s) have you made through your mobile device this year? :  None  
 1-3  
 4-6  
 7 above



## **Section B: Evaluate the Factors Affecting Universiti Tunku Abdul Rahman (UTAR) Final Year Business Undergraduate Students' Adoption Decisions in Mobile Commerce**

*In this section, we seek for your opinion regarding the factors affecting Universiti Tunku Abdul Rahman (UTAR) final year business undergraduate students' adoption decisions in mobile commerce. Please indicate the extent to which you agreed or disagreed with each statement using 5 points Likert scale.*

(1) = *Strongly Disagree*    (2) = *Disagree*                      (3) = *Neither agree nor disagree*  
(4) = *Agree*                      (5) = *Strongly Agree*

*Please circle one number per line to indicate the extent to which you agreed or disagreed with the following statements.*

### **1. Perceived Ease of Use (PEOU)**

Circle the number that best describes your response to each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.It will be easy for me to become skillful at using m-commerce.	1	2	3	4	5
2.Mobile commerce is easy to use from any location at any time.	1	2	3	4	5
3.Using mobile commerce was entirely within my control.	1	2	3	4	5

**2. Perceived Usefulness (PU)**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.It is fashionable and trendy to use mobile commerce.	1	2	3	4	5
2.The development of mobile commerce is a waste of resources.	1	2	3	4	5
3.Mobile commerce contributes to the betterment of life.	1	2	3	4	5

**3. Perceived Barriers (PE)**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.I feel mobile commerce is uneconomical.	1	2	3	4	5
2.I find that mobile commerce platforms are difficult to use.	1	2	3	4	5
3.I feel that I am at risk of identity theft when making mobile commerce transactions.	1	2	3	4	5
4.I would be charged more to use mobile commerce.	1	2	3	4	5
5.I prefer to use physical forms of payment for my mobile commerce transactions.	1	2	3	4	5

**4. Perceived Benefits (PB)**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.I can use mobile commerce anywhere.	1	2	3	4	5
2.I can use mobile commerce anytime.	1	2	3	4	5
3.I can have immediate access.	1	2	3	4	5
4.I feel secure using my own mobile phone	1	2	3	4	5

**5. Mobile Commerce Adoption (A)**

The following statements are seeking your opinion regarding the impacts of the adoption of the mobile commerce. Circle the number that best describes your response to each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.I intend to use mobile commerce.	1	2	3	4	5
2.I intend to learn how to use mobile commerce platform to perform my transaction.	1	2	3	4	5
3.I intend to use mobile commerce services in future.	1	2	3	4	5
4.I intend to use mobile commerce to perform retail transactions online more often.	1	2	3	4	5
5.I intend to recommend mobile commerce to my friends.	1	2	3	4	5

Thank you for your valuable time, opinion, and comments.