CONCEPTUAL MODEL OF CONSUMER ACCEPTANCE ON MOBILE COMMERCE IN MALAYSIA

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DEDICATION

This thesis is dedicated to my father, who taught me that the best kind of knowledge to have is that which is learned for its own sake. It is also dedicated to my mother, who taught me that even the largest task can be accomplished if it is done one step at a time. I must also thank my wife Dr.Mais for her support and patience. Special thanks to my brother and sisters who supported me all the time.

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إلى من شجعني على المثابرة والصبر طوال عمري، إلى قدوتي في حياتي

(والدي العزيز الأستاذ عبد الخالق صبري الراوي)

إلى من بـــــها أسمو العلا، وعليها أرتكز، إلى القـــــلب المعطاء

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إلى أسمى رموز الإخلاص والوفاء ورفيقة الدرب

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إلى كل من ساهم و ساعدني في حياتي الدراسية .....

إلى جميع ما سبق : أهدي رسالتي الدكتوراه هذه ، الذي أسال الله تعالى أن يتقبلها خالصًا....

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ABSTRACT

The use of Mobile commerce (m-commerce) services is rapidly growing in various fields. However, there has been no research on the relationship between m-commerce performance and effort expectancies, social influence, facilitating conditions, trust, risk, mobility, and personal innovation. Several factors have driven the usage of m-commerce. Therefore, the study aims to identify the acceptance factors affecting consumers' behavioural intention towards m-commerce applications by adopting the revised Unified Theory of Acceptance and Use of Technology (UTAUT) model. Concerning the behavioural choice towards m-commerce applications concerns, the following objectives were identified. First, to determine the acceptance factors affecting consumers' behavioural intention towards m-commerce applications. Secondly, to develop and evaluate the proposed model on consumers' behavioural preference towards using a mobile commerce application based on the revised UTAUT model. Thirdly, to examine the moderating effects of the proposed model on consumer behavioural intention toward using a mobile commerce application. This study employed a quantitative method, using a survey questionnaire, whereby 370 respondents participated in the overall data collection phase, which involved the surrounding Kuala Lumpur area. The collected data was analyzed using PLS-SEM software. Thus, this study identified eight factors, namely performance expectancy, effort expectancy, social influence, facilitating conditions, mobility, personal innovation, perceived risk, and perceived trust, as influencing factors. Furthermore, the proposed model was tested with seven moderators: age, gender, experience, education level, income, marital, and payment method, to investigate the moderation relationship between these factors. This research revealed that performance expectancy, effort expectancy, social influence, facilitating conditions, perceived risk, perceived trust, personal innovation, and loading mobility to predict behavioural intention to use mobile services in the Malaysian environment. Furthermore, the independent variables were found to influence the behavioural choice significantly. However, perceived risk was found not to predict the behavioural intention to use mobile services in Malaysia. In summary, the proposed model can be used as a reference model by the related sectors such as financial and retail services to inspire their consumers to accept mobile services to be used more effectively for buying and selling goods and services in the future.

ABSTRAK

Penggunaan perkhidmatan perdagangan mudah alih (m-commerce) semakin berkembang pesat dalam pelbagai bidang. Walau bagaimanapun, tiada kajian tentang hubungan antara prestasi m-dagang dan jangkaan usaha, pengaruh sosial, keadaan memudahkan, kepercayaan, risiko, mobiliti dan inovasi peribadi. Beberapa faktor telah mendorong penggunaan m-dagang. Oleh itu, kajian ini bertujuan untuk mengenal pasti faktor penerimaan yang mempengaruhi niat pengguna terhadap tingkah laku perdagangan mudah alih dengan menggunakan model *Unified Theory of Acceptance* and *Use of Technology* (UTAUT) yang disemak semula. Dengan merujuk kepada niat tingkah laku terhadap permasalahan aplikasi perdagangan mudah alih, objektif berikut telah dikenal pasti. Pertama, untuk menentukan faktor penerimaan yang mempengaruhi niat pengguna terhadap aplikasi perdagangan mudah alih. Kedua, untuk membangunkan dan menilai model yang dicadangkan mengenai niat tingkah laku pengguna terhadap penggunaan aplikasi perdagangan mudah alih berdasarkan model UTAUT yang disemak semula. Ketiga, untuk mengkaji kesan penyederhanaan model yang dicadangkan pada niat tingkah laku pengguna terhadap penggunaan aplikasi perdagangan mudah alih. Kajian ini menggunakan kaedah kuantitatif, menggunakan soal selidik tinjauan, di mana 370 responden mengambil bahagian dalam fasa pengumpulan data keseluruhan yang melibatkan kawasan sekitar Kuala Lumpur. Data yang dikumpul dianalisis menggunakan perisian PLS-SEM. Justeru, kajian ini mengenal pasti lapan faktor iaitu jangkaan prestasi, harapan usaha, pengaruh sosial, keadaan pemudahcaraan, mobiliti, inovasi peribadi, risiko yang dirasakan dan kepercayaan yang dikenal pasti sebagai faktor yang mempengaruhi. Selanjutnya, model yang dicadangkan telah diuji dengan tujuh moderator iaitu, umur, jantina, pengalaman, tahap pendidikan, pendapatan, perkahwinan dan kaedah pembayaran untuk mengkaji hubungan moderasi antara faktor-faktor yang terlibat. Kajian ini menunjukkan bahawa, jangkaan prestasi, harapan usaha, pengaruh sosial, keadaan pemudahcara, risiko yang dirasakan, kepercayaan yang dirasakan, inovasi peribadi dan mobiliti dimuat menjadi peramal niat tingkah laku untuk menggunakan perkhidmatan mudah alih dalam persekitaran Malaysia. Tambahan pula, pemboleh ubah bebas didapati mempengaruhi niat tingkah laku secara signifikan. Walau bagaimanapun, persepsi risiko didapati tidak menjadi peramal kepada niat tingkah laku untuk menggunakan perkhidmatan mudah alih di Malaysia. Secara ringkasnya, model yang dicadangkan boleh digunakan sebagai model rujukan oleh sektor yang berkaitan seperti perkhidmatan kewangan dan runcit untuk memberi inspirasi kepada pengguna mereka menerima perkhidmatan perdagangan mudah alih agar dapat digunakan dengan lebih berkesan untuk membeli dan menjual barang dan perkhidmatan pada masa depan.

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LIST OF ABBREVIATIONS

PDAs	-	Personal Digital Assistants
4G	-	Fourth Generation
b2c	-	Business to Consumer
TAM-TPB	-	Combined TAM and TPB
PU	-	Model of PC Utilization
MCMC	-	Malaysian Communications and Multimedia Commission
UTAUT	-	The Unified Theory of Acceptance and Use of Technology model
UMPC	-	Ultra-Mobile Personal Computers
WOM	-	Word of Mouth
TAM	-	Technology Acceptance Model
TRA	-	Theory of Reasoned Action
UTM	-	Universiti Teknologi Malaysia
TPB	-	Theory of Planned Behaviour
PLS-SEM	-	Partial Least Squares Structural Equation Modelling
ITU	-	International Telecommunication Union
TTF	-	Task-Technology Fit model
ICT	-	Information and Communication Technology (ICT)
MMS	-	Multimedia Messaging Service
SMS	-	Short Message Service
ATM	-	Automated Teller Machine
MSNS	-	Mobile Social Network Services
1G	-	The First Generation
2G	-	Second Generation
2.5G	-	The Transitional Generation of (2G) and (3G)
CDMA	-	Code-Division Multiple Access
GSM	-	Global System for Mobile Communications
3G	-	Third Generation
CMV	-	Common-Method Variance
HTMT	-	Heterotrait-Monotrait
CR	-	Composite Reliability

AVE	-	Average Variance
VIF	-	Variance Inflation Factor

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The emerging set of applications and services that people can access from internet-enabled mobile devices is commonly referred to as mobile commerce or m-commerce (Chou, Li, & Ho, 2018). In modern life and business, electronic and web technologies are a significant economic and social force. By introducing unique channels for buying and exchanging information, commercial activities conducted over computers and mobile networks empower business processes and add value to consumers. Mobile commerce (m-commerce) is a rapidly growing segment of digital commerce solutions in Malaysia, with sales expected to reach US$8.9 billion by 2023 (JP Morgan, 2020).

The e-commerce industry in Southeast Asia is estimated to be worth US$200 billion by 2025, as shown in a cooperation report prepared by Google and Temasek Holdings in 2017. Meanwhile, m-commerce is likely to grow e-commerce as a mobile user accounts for more than 90 percent of Southeast Asian Web users, according to the report. M-commerce usage was 58 percent in Thailand, 40 percent in Malaysia, 39 percent in Singapore, 33 percent in Vietnam, 31 percent in Indonesia, and 25 percent in the Philippines as of January 2018. M-commerce leads to the purchase and sale of products and services on the Internet using mobile phones, according to Lexicon of the Financial Times. The Google-Temasek study also notes that the most significant increase in m-commerce has been seen in ride-hailing services, with the overall volume of goods expected to rise to US$20.1 billion by 2025, as shown in Figure 1.2.

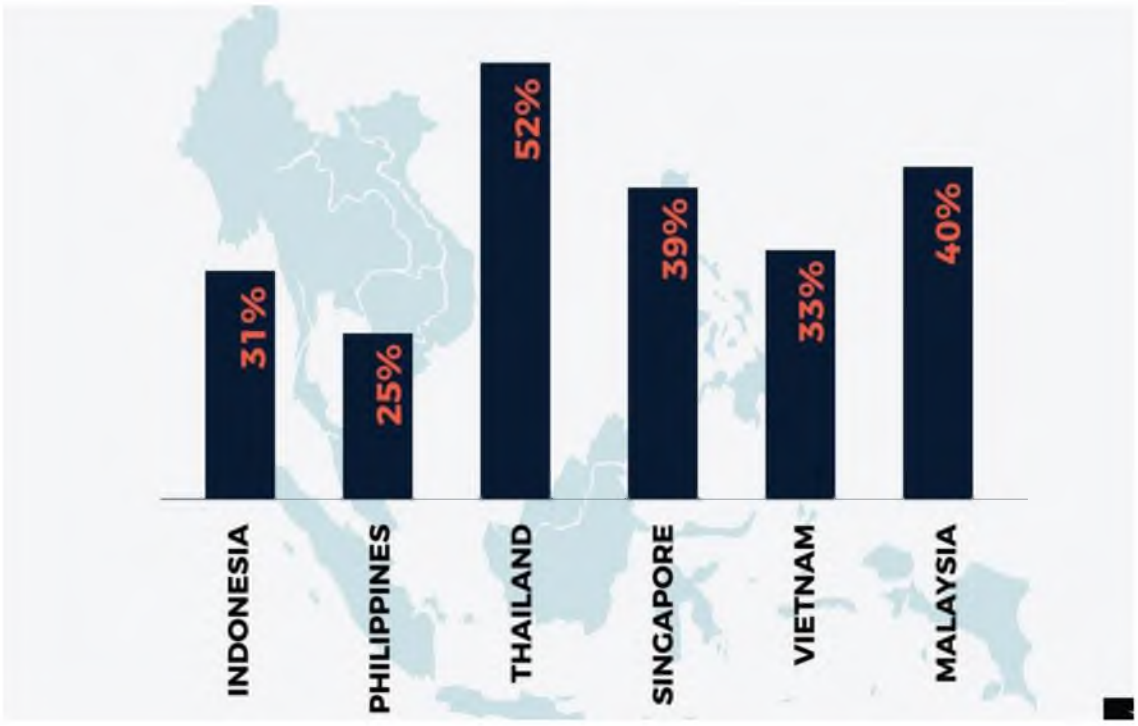

Figure 1.1 M-commerce Penetration in South East Asia and Malaysia (MCMC 2017)

According to Swilley, Hofacker, and Lamont (2020), companies are under increasing pressure to use m-commerce strategies to gain a sustainable competitive advantage in attracting new customers and retaining existing ones. As a result, web and mobile technology knowledge and intellectual capitals are valuable business assets and competitive advantages (Blaise, Halloran, & Muchnick, 2018). In this context, business models are linked to technological innovation (Baden-Fuller, C. 2021); firms must understand how users of m-commerce perceive and utilize m-commerce to develop more efficient and effective technology interfaces to formulate their strategies. Within the current body of research on technology acceptance that relates to the context of competitive advantage (Blaise, Halloran, & Muchnick, 2018), a range of established attitudes and perceptions related to predictive m-commerce purchase intentions exist.

Trust and risk concerns were reliable predictors of m-commerce purchase intentions in several studies (Blaise, Halloran, & Muchnick, 2018; Verkijika, 2018;

Dakduk, Santalla-Banderali, & Siqueira, 2020). In addition, mobility predicts m-commerce acceptance behaviors, according to other researchers (Blaise, Halloran, & Muchnick, 2018; Marinkovic & Kalinic, 2017; Alrawi, GanthanNarayanaSamy, Shanmugam, Lakshmiganthan, & NurazeanMaarop, 2020; Sultana, 2020; J.-M. Lee, Lee, & Rha, 2019). also, personal innovation that predicts m-commerce acceptance behavior (Marinković, Đorđević, & Kalinić, 2020; Alrawi, GanthanNarayanaSamy, Shanmugam, Lakshmiganthan, & NurazeanMaarop, 2020; Sultana, 2020; C. Zhang, Ma, Li, & Singh, 2020; Sharma, Singh, Pratt, & Narayan, 2020; Chopdar, Korfiatis, Sivakumar, & Lytras, 2018). performance expectancy and effort expectancy predict m-commerce adoption behaviors (Blaise, Halloran, & Muchnick, 2018; Verkijika, 2018; Chou, Li, & Ho, 2018). Social influence, or the extent to which someone adopts m-commerce based on the views of others, also indicated a determinant of m-commerce purchase intentions (Marinković, Đorđević, & Kalinić, 2020; (Asastani, Kusumawardhana, & Warnars, 2018; Alrawi, GanthanNarayanaSamy, Shanmugam, Lakshmiganthan, & NurazeanMaarop, 2020; Chou, Li, & Ho, 2018).

Past research expanded knowledge about attitudes and perceptions toward e-commerce that drive consumer purchase intentions and provide a competitive advantage (Blaise, Halloran, & Muchnick, 2018; Jonsson, Källström, & Wallander, 2019). some researchers maintained the fundamental behavioral dynamics associated with m-commerce require further investigation (Rahman, Liang, Gu, Ding, & Akter, 2019; Budzanowska-Drzewiecka & Tutko, 2021). From 2017 to 2021, among the published m-commerce studies (Blaise, Halloran, & Muchnick, 2018; Imtiaz, 2018; Sombultawee, 2017; Sarkar, Chauhan & Khare, A. 2020; Ofori, Boakye, Addae, Ampong & Adu 2017; Jiang, 2017), none included investigation of the relationship between perceptions of m-commerce performance and effort expectancies, social influence, the facilitating conditions of m-commerce trust and perceived risk, personal innovation, mobility and customer purchase intentions.

This study's research problem addresses a knowledge gap regarding the impact of users' perceptions of m-commerce performance and effort expectations, trust, and perceived risk of their purchase intentions, which can be used in the business world to develop competitive advantages. According to research, performance and effort expectations, social influence, and enabling conditions of trust, perceived risk,

personal innovation, and mobility may all play a role in predicting m-commerce purchase intentions (Alrawi, GanthanNarayanaSamy, Shanmugam, Lakshmiganthan, & NurazeanMaarop, 2020; Sair& Danish 2018).

The degree to which an individual believes that a technical infrastructure exists to support technology use is referred to as facilitating conditions in this context. Facilitating conditions "includes self-efficacy, resource facilitating conditions, and technology facilitating conditions" and "reflects perceptions of internal and external constraints on behavior." (Venkatesh, Morris, Davis & Davis. 2003). No study has combined these factors into a single model to determine their relative impact on m-commerce acceptance. The study includes a design that aims to fill a gap in the research literature, potentially revealing significant competitive advantages applied to m-commerce.

1.2 Research Problem Background

Behavioral models to predict user intentions and behaviors have become a popular trend in e- and m-commerce research. In the research literature, there are a variety of approaches to understanding the processes associated with mobile commerce acceptance. (Blaise, Halloran & Muchnick, 2018; Assistant, Kusumawardhana & Warners. 2018, Lee, Lee, B & Rha. 2019; Marinković, Đorđević, & Kalinić, 2020). The common goal is for researchers to gain insight into consumers' perceptions of m-commerce and their subsequent behavioral intentions to increase adaptation rates, a crucial metric for determining the percentage of users who take the desired action like sales adaptations. In m-commerce, research studies have revealed several predictors of behavioral intentions and adaptation rates using various theoretical frameworks. (Anwar, Thongpapanl & Ashraf. 2020; Sombultawee, 2017; McLean, Osei-Frimpong, Al-Nabhani & Marriott. 2020).

Davis (1989) laid the groundwork for studying the impact of consumer acceptance on technology adoption, while Lederer, Maupin, Sena, and Zhuang (2000) were among the first to draw a link between ease of use and usefulness to predict

website application usage. Marketers sought to influence consumers to embrace newer developments in m-commerce as researchers refined models to measure user intention and use online. (McLean, 2018; Tarhini, Alalwan, Shammout, & Al-Badi. 2019). Asastani, Kusumawardhana & Warnars, 2018, September.; Marinković, Đorđević, & Kalinić, 2020). Some of the most relevant consumer behavioral theories in the context of m-commerce include those of user acceptance and usage, namely technology acceptance model (TAM), extended TAM (TAM2), the theory of reasoned action (TRA), the theory of planned behavior (TPB), and the unified theory of acceptance and use of technology (UTAUT).

These models represent the cornerstone for subsequent m-commerce research, which has become a significant academic pursuit due to the exponential growth in web technologies. Electronic and web technologies are substantial economic and social forces in contemporary life and business (Sepasgozar, Hawken, Sargolzaei, & Foroozanfa, 2019). Mobile commerce (m-commerce) is a fast-growing segment of digital commerce solutions in Malaysia, with sales expected to reach $8.9 billion by 2023. (JP Morgan, 2020), while global m-commerce sales are expected to reach $3.56 trillion by the end of 2021 (JP Morgan, 2020). (Statista, 2020). As a result, mobile technologies' knowledge and intellectual capitals are essential business assets and a source of competitive advantage Abualoush, Masa'deh, Bataineh, & Alrowwad, (2018). A better understanding of the predictors of m-commerce purchase intentions could improve and expand competitive advantages and growth opportunities (Lin, Wang, & Hajli, 2019).

Academic research on the applications of m-commerce from strategic lenses has been scarce (Chopdar & Balakrishnan 2020). As a result, only a few m-commerce strategic frameworks of reference exist. The study's research topic focuses on developing knowledge that can be applied to m-commerce to improve competitive advantages by investigating what motivates and facilitates Malaysian consumers' m-commerce purchase intentions and what factors can affect the consumer behavers toward using m-commerce, such as risk, trust, personal innovations, and mobility. The study employs the framework of the unified theory of acceptance and use of technology (Venkatesh, Morris, Davis, & Davis, 2003), which claims that user acceptance of technology is influenced by performance expectancy, effort expectancy,

social influence, and facilitating conditions. Thus, producing limited m-commerce strategic frameworks of reference. The research topic addressed in this study focuses on developing knowledge that can be applied to m-commerce to enhance competitive advantages by investigating what drives and facilitates m-commerce purchase intentions among Malaysian consumers. The research includes the unified theory of acceptance and use of technology (Venkatesh, Morris, Davis, & Davis, 2003), which posits that performance expectancy, effort expectancy, social influence, and facilitating conditions impact user acceptance of the technology.

1.3 Problem Statement

Previous research has found that several important factors, such as consumer attitudes and expectations toward e-commerce, predict consumer purchase intentions, providing insight into gaining a competitive advantage. However, it is still unclear whether the same factors predict m-commerce purchase intentions; in other words, little is known about how the fundamental behavioral dynamics of m-commerce translate into competitive advantages. There has been researched on the predictors of m-commerce purchase intentions; however, there has been no research on the relationship between m-commerce performance and effort expectancies, social influence, the facilitating conditions, trust, risk, mobility, and personal innovation. This study's research problem is to fill a knowledge gap about users' perceptions of m-commerce performance and effort expectations, social influence, trust, risk, mobility, and personal innovation on their purchase intentions, which can be used in business to develop competitive advantages.

1.4 Research Questions

i. What are the factors that influence consumer behavioral intention to use m-commerce?
ii. What is the relationship between consumer' behavioral intention factors and mobile commerce use?

iii. How to develop a model of mobile commerce use through consumer' behavioral intention factors?

1.5 Research Objectives

The objectives of the research are:

i. To identify the factors affecting consumers' behavioral intention towards m-commerce.
ii. To develop a model of mobile commerce, use through the consumer' behavioral intention factors.
iii. To evaluate the relationship between consumer' behavioral intention factors and mobile commerce use.

1.6 Research Significance

The focus of this study is on Malaysian m-commerce acceptance. M-commerce is still in its infancy, but it has the potential to benefit all consumers. Because of the rapid growth of m-commerce, more information about its role in Malaysia is required. As a result, the importance of this research is based on determining the factors that influence consumer behavioral intentions to use m-commerce in Malaysia. The significance of this study's findings in explaining the causes that lead to m-commerce companies and researchers will be the study's output. The study's findings on the factors influencing m-commerce usage intention in Malaysia may be helpful for other developing countries in this region.

This study adds to both the theoretical and practical aspects of the field. The research expands on the Unified Theory of Acceptance and Technology Usage from an academic standpoint (UTAUT). This study could help practitioners and researchers better understand the factors that influence how people use mobile commerce. The study presents a one-of-a-kind framework that integrates UTAUT into academic research.

1.7 Practical Contribution

The study will identify the factors that influence consumers' purchasing power when using m-commerce applications and provide a research model based on the findings. The main practical effect is that it allows online merchants to manage their websites to improve online sales. In addition, some policies and tactics can be used to support consumer preferences and beliefs in trust and security. Therefore, this research will include an empirical investigation into these antecedents to promote, use, and embrace the purpose of online shopping and to understand shopper confidence and security in M-commerce better.

1.8 Theoretical Contribution

The purpose of this thesis is to present a proposed approach for m-commerce applications to consumers by identifying the variables that can influence users' purchase decisions when using m-commerce. Much of the research has previously focused on identifying and describing the negative impact of consumer behavior on m-commerce usage. However, research is scarce in the development and methodological testing of models for healthy m-commerce use. In addition, a proposed concept for the safe and simple use of m-commerce was developed and tested in this study. The incorporation of models has benefited from new expertise in recognizing and assessing critical histories of customer usage and m-commerce activity. As a result, this study provides a theoretical foundation and an explanation of how Malaysian consumers perceive the emergence of emerging technology.

1.9 Research Scope

This study aims to fill a gap in the research literature on m-commerce acceptance by looking into the factors influencing consumer intention to use the service. The study's main research questions and sub questions look into how factors like UTAUT model performance, effort expectations, social influence, facilitating

conditions, trust, perceived risk, mobility, and personal innovation can predict customer m-commerce purchase intentions. On the other hands, since mobile commerce users differ by age and other demographics including gender, knowledge or level of education, this study targeted smart phone users aged between 18 to 60 years old in Kuala-Lumpur.

In addition, adult Malaysian users of m-commerce were asked to complete a questionnaire to measure the proposed factors based on the extended UTAUT model. Results from the study are intended to provide knowledge for firms seeking to gain a competitive advantage through m-commerce acceptance models. These research targets districts in Kuala Lumpur and city centre. In gathering data from smart phone user at each district in Kuala Lumpur, quantitative methods are used. Unified Theory of Acceptance and Use of Technology (UTAUT), was used as a basis for gathering quantitative data. Structural Equation Modelling (SEM) is used in this research to perform empirical validation of the model proposed including evaluating the measurement model and structural model. Smart PLS3 software package was utilized in this research to realize the methodology.

1.10 Organization of Thesis

This thesis consists of six chapters. Chapter 1 provides an overview and background of the research. It also describes the critical issues motivating this research, including the problem statement, research questions, research objectives, research scope, and significant research contributions.

Chapter 2 describes an inclusive review of the relevant literature. The chapter begins with defining critical concepts, including M-commerce Background, Theories related to M-commerce, and M-commerce in Malaysia. It is then followed by discussing several theories used in UTAUT and M-commerce accept, download and usage. Next, the gaps in the literature are explained. In addition, the factors that influence the consumer use of mobile –commerce applications.

Chapter 3 explains the research methodology used in this research. It starts with the description of research methods in the field of Mobile-Commerce. The rationale of selecting the quantitative method research approach is then justified. It is followed by explaining each phase of the research process, including the investigation, collection, data analysis, quantitative data collection and analysis, and report writing.

Chapter 4 portrays the model formulation of this research. The chapter starts with the justification of models selected for this research. This is followed by the discussion on the chosen models, namely the revised UTAUT Model. Furthermore, it also discusses the research model, research variables, and hypotheses formulation.

Chapter 5 presents quantitative analysis and findings. First, data collection and examination describe response rates, non-response bias, common method bias, missing value, and normality assessment. The descriptive statistics for demographics are then presented. The exploratory factor analysis is explained in the next section, followed by the confirmatory factor analysis. Moreover, the structural equation modeling, which includes the evaluation of the measurement model, and structural model, hypotheses testing, and analysis of mediation effects, are explained. The final research model is presented at the end of this chapter.

Chapter 6 concludes the research with the achievements of research objectives and a discussion on the research findings. Besides, this chapter highlights the research contributions theoretically, methodologically, and practically. It also addresses the limitations of this research as well as provides recommendations for future research. The chapter ends with the concluding remarks.

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