

**Determinants of Adoption Readiness, Perceived Risk, and
Behavioural Intention Toward Mobile Wallet Adoption in Malaysia**

by

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DECLARATION

I hereby declare that the work presented in this dissertation was conducted in full compliance with the regulations of Universiti Malaysia Sarawak (UNIMAS). Except where proper acknowledgment is given, this work is solely the effort of the author. This dissertation has not been accepted for the award of any other degree and is not being **concurrently** submitted for any other academic qualification.

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Determinants of Adoption Readiness, Perceived Risk, and Behavioural Intention Toward Mobile Wallet Adoption in Malaysia

ABSTRACT

The rapid development of digital financial technologies has transformed the global financial services landscape, with mobile wallet applications emerging as a key platform for facilitating digital transactions. In Malaysia, the adoption of mobile wallet services has increased significantly in recent years due to rising smartphone penetration, government initiatives supporting digital payments, and growing consumer demand for convenient financial solutions. This study investigates the determinants of adoption readiness, perceived risk, and behavioural intention to use mobile wallet services among Malaysian consumers. The research integrates constructs from the Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) to examine the influence of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on adoption readiness. A quantitative research approach was employed, and data were collected through a structured survey administered to mobile wallet users in Malaysia. The data were analysed using exploratory factor analysis and multiple regression analysis to test the proposed hypotheses. The findings indicate that perceived usefulness, perceived ease of use, compatibility, trialability, and observability significantly influence consumers' adoption readiness toward mobile wallet services. The results also demonstrate that demographic characteristics moderate selected relationships between adoption readiness, perceived risk, and behavioural intention. Overall, the study provides important theoretical and practical insights for policymakers, financial institutions, and fintech service providers in enhancing mobile wallet adoption and strengthening consumer trust in digital financial services.

Keywords: Adoption Readiness, Perceived Risk, Behavioural Intention, Perceived Ease of Use, Digital Financial Services

Penentu Kesediaan Penerimaan, Risiko Persepsi dan Niat Tingkah Laku Terhadap Penggunaan Dompet Mudah Alih di Malaysia

ABSTRAK

Perkembangan pesat teknologi kewangan digital telah mengubah landskap perkhidmatan kewangan global, dengan aplikasi dompet mudah alih muncul sebagai platform penting dalam memudahkan transaksi digital. Di Malaysia, penggunaan perkhidmatan dompet mudah alih telah meningkat dengan ketara dalam beberapa tahun kebelakangan ini, didorong oleh peningkatan penembusan telefon pintar, inisiatif kerajaan yang menyokong pembayaran digital, serta permintaan pengguna terhadap penyelesaian kewangan yang lebih mudah, pantas dan efisien. Walau bagaimanapun, tahap penerimaan pengguna masih tidak seragam, khususnya apabila isu kesediaan penerimaan, risiko persepsi, dan faktor demografi diambil kira. Pendekatan kuantitatif telah digunakan, dan data dikumpulkan melalui soal selidik berstruktur yang diedarkan kepada pengguna dompet mudah alih di Malaysia. Data dianalisis menggunakan statistik deskriptif, analisis kebolehpercayaan, analisis faktor penerokaan, regresi berganda, dan analisis moderasi bagi menguji hipotesis yang dicadangkan. Secara keseluruhannya, kajian ini menyumbang kepada pemahaman teori dan amalan berkaitan penggunaan dompet mudah alih, serta memberi implikasi penting kepada pembuat dasar, institusi kewangan, dan penyedia perkhidmatan fintech dalam usaha meningkatkan penggunaan dompet mudah alih secara lebih inklusif dan selamat di Malaysia.

Kata Kunci: *Kesediaan Penerimaan, Risiko Persepsi, Niat Tingkah Laku, Kemudahan Penggunaan yang Dirasai, Perkhidmatan Kewangan Digital.*

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LIST OF ABBREVIATIONS

AR	Adoption Readiness
BI	Behavioural Intention
BNM	Bank Negara Malaysia
EFA	Exploratory Factor Analysis
ICT	Information and Communication Technology
IDT	Innovation Diffusion Theory
MCMC	Malaysian Communications and Multimedia Commission
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
PR	Perceived Risk
SEM	Structural Equation Modelling
TAM	Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER 1:
INTRODUCTION

1.1 Introduction

The rapid evolution of digital technology has transformed the delivery and consumption of financial services across the world. One of the most visible outcomes of this transformation is the rise of mobile wallet services, which allow users to make payments, transfer funds, settle bills, and perform other financial transactions using smartphones and internet-enabled devices. Mobile wallets have become increasingly important in modern payment ecosystems because they offer speed, convenience, accessibility, and integration with broader digital platforms and services (Oliveira et al., 2016; Omarini, 2022). As economies move toward cashless transactions and digitally connected financial systems, mobile wallet adoption has emerged as a significant topic in both academic research and policy discussions.

In Malaysia, the development of digital finance has accelerated due to wider smartphone ownership, improved digital infrastructure, stronger fintech ecosystems, and policy support for electronic payments. Bank Negara Malaysia has actively promoted digital financial transformation through regulatory initiatives and strategic frameworks aimed at improving financial inclusion, efficiency, and innovation in the national payment system (Bank Negara Malaysia, 2022, 2024). At the same time, the rapid expansion of mobile wallet platforms such as Touch 'n Go eWallet, GrabPay, Boost, and MAE has made digital transactions increasingly visible in everyday consumer life. Recent reports also

indicate strong growth in e-payment activity and mobile wallet use in Malaysia, reflecting changing payment behaviour among consumers (The Star, 2024; Upstack Studio, 2024).

Despite this progress, the adoption of mobile wallet services remains uneven across consumer groups. While younger, urban, and digitally experienced users are generally more receptive to mobile wallet technology, other groups continue to demonstrate hesitation or resistance. This suggests that widespread access to smartphones and digital infrastructure does not automatically guarantee equal adoption. Concerns relating to security, privacy, trust, technological complexity, and user readiness continue to affect the willingness of consumers to adopt digital financial services (Oppotus, 2023; Shaikh et al., 2023).

This study focuses on three major constructs that are central to understanding mobile wallet adoption in Malaysia, namely adoption readiness, perceived risk, and behavioural intention. Adoption readiness reflects the extent to which consumers are prepared, confident, and willing to use mobile wallet services. Perceived risk refers to the uncertainty or potential negative consequences consumers associate with the use of such services, particularly in relation to security and privacy. Behavioural intention represents the consumer's willingness to adopt or continue using mobile wallet services. In addition, the study examines whether demographic factors shape the strength of the relationships between these constructs.

The study is theoretically grounded in the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and the perceived risk perspective. TAM explains the role of perceived usefulness and perceived ease of use in shaping technology acceptance (Davis, 1989; Venkatesh et al., 2003). IDT explains how innovation characteristics such as compatibility, trialability, and observability influence adoption decisions (Rogers, 2003). Perceived risk theory complements these perspectives by explaining how concerns about

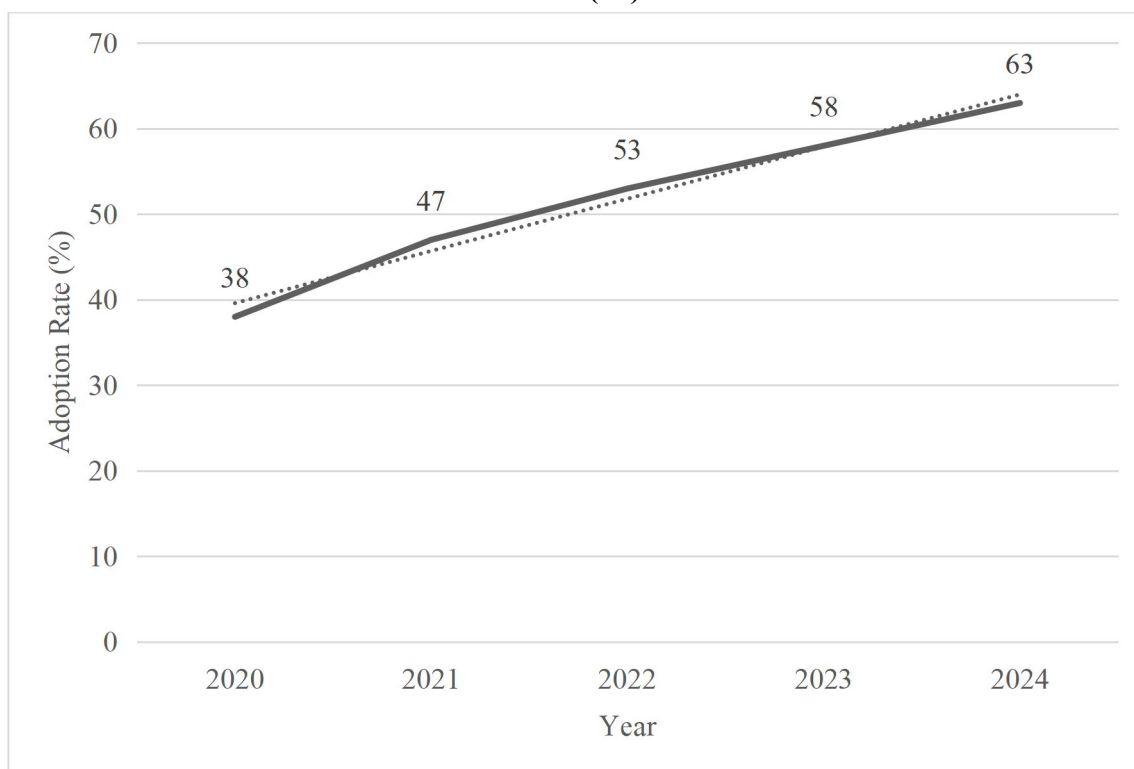
loss, privacy, and uncertainty may inhibit adoption, particularly in financial technology contexts (Featherman & Pavlou, 2003; Akbar et al., 2020). By integrating these perspectives, this study develops a more comprehensive understanding of mobile wallet adoption in Malaysia. Accordingly, this chapter presents the background of the study, the problem statement, research questions, research objectives, significance of the study, scope of the study, definitions of key terms, and the organization of the thesis.

1.2 Background of Study

The rapid advancement of financial technologies (fintech) has reshaped financial ecosystems globally, affecting consumer behaviour, market dynamics, and regulatory environments. Digital payment solutions, especially mobile wallets, have become central to these developments, offering advantages such as convenience, cost-efficiency, and enhanced security (Capgemini & Efma, 2023). The global mobile wallet transaction volume exceeded USD 15.9 trillion in 2024, driven by strong adoption rates in Asia-Pacific, North America, and Europe, indicating a fundamental shift away from traditional cash and card payments (Statista, 2024).

Internationally, mobile wallet adoption varies considerably by region and demographic segment. For instance, China leads global adoption with more than 90% usage through dominant platforms such as Alipay and WeChat Pay (McKinsey & Company, 2023). India follows closely, accelerated by government-led initiatives like Unified Payments Interface (UPI) and demonetization measures that have significantly boosted mobile payment usage to over 350 million active users as of 2023 (Reserve Bank of India, 2023). Conversely, adoption in Western countries like the United States and European nations, although growing, remains relatively slower due to entrenched traditional payment habits and stronger concerns about privacy and security (Visa, 2023).

**Figure 1-1:
Mobile Wallet Adoption Rate in Malaysia (2020–2024) Mobile Wallet Adoption Rate (%)**



Source: Adyen Index (2024); Upstack Studio (2024)

**Table 1-1:
Mobile Wallet Adoption Rate in Malaysia (2020–2024)**

Year	Mobile Wallet Adoption Rate (%)
2020	38
2021	47
2022	53
2023	58
2024	63

Source: Adyen Index (2024); Upstack Studio (2024)

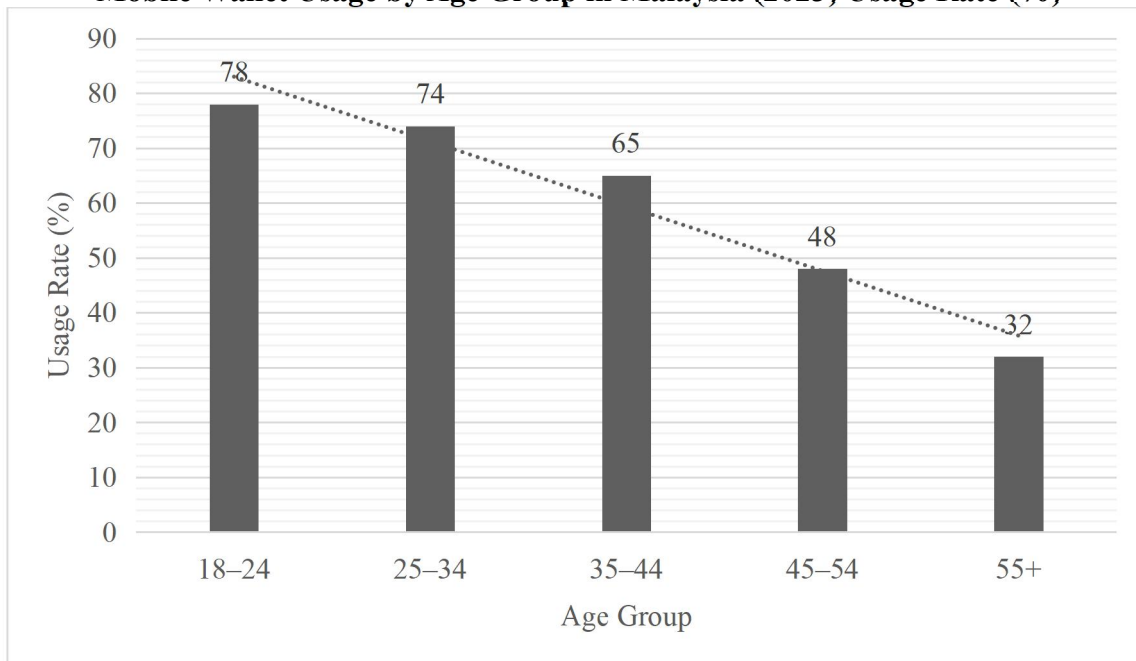
Figure 1-1 and Table 1-1 presents the annual progression of mobile wallet adoption rates in Malaysia from 2020 to 2024. The data clearly illustrates a steady and significant increase, reflecting a shift towards greater acceptance of digital payment platforms among Malaysians. In 2020, adoption stood at 38%, indicating initial hesitancy or limited

awareness of mobile wallets. Subsequent years show gradual but consistent growth, climbing to 47% in 2021 and 53% in 2022. By 2023, the adoption rate reached 58%, marking a pivotal period influenced by increased digital financial literacy, enhanced regulatory support, and consumer preferences accelerated by the COVID-19 pandemic. In 2024, the rate peaked at 63%, underscoring the effectiveness of government initiatives, promotional activities by wallet providers, and overall consumer readiness to embrace digital payment solutions. This upward trajectory highlights a growing public confidence and reliance on mobile wallets as convenient and secure financial tools. However, it also emphasizes the necessity to address remaining barriers particularly perceived security risks and demographic disparities to further broaden adoption across all segments of society.

Malaysia represents a compelling case in Southeast Asia's fintech landscape. The Malaysian government has strategically facilitated fintech growth, notably through regulatory frameworks and promotional programs like e-Tunai Rakyat, significantly boosting mobile wallet usage (Ministry of Finance Malaysia, 2023). Prominent local mobile wallet services such as Touch 'n Go eWallet, GrabPay, and Boost have rapidly expanded their user base, driven by increasing digital literacy, supportive government policies, and the COVID-19 pandemic's acceleration of digital payment preferences.

Despite these advancements, significant challenges persist within the Malaysian context, echoing international patterns of uneven adoption. While urban and younger populations rapidly adopt mobile wallets, rural communities, older adults, and digitally less literate individuals exhibit considerable resistance. Studies by Oppotus (2023) and Lee et al. (2023) underscore persistent security and privacy concerns as critical barriers, particularly among older and rural users who often prefer traditional financial channels due to familiarity and perceived lower risk.

**Figure 1-2:
Mobile Wallet Usage by Age Group in Malaysia (2023) Usage Rate (%)**



Source: Malaysian Communications and Multimedia Commission (MCMC), 2023

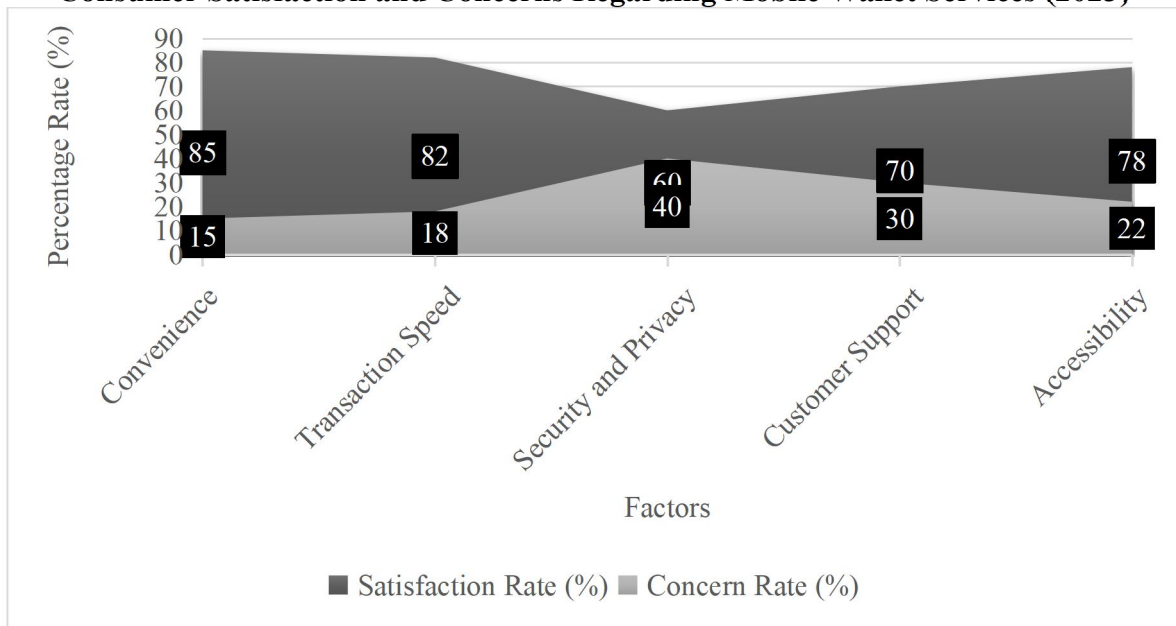
**Table 1-2:
Mobile Wallet Usage by Age Group in Malaysia (2023)**

Age Group	Usage Rate (%)
18-24	78
25-34	74
35-44	65
45-54	48
55+	32

Source: Malaysian Communications and Multimedia Commission (MCMC), 2023

Figure 1-2 and Table 1-2 illustrates clear demographic disparities in mobile wallet usage in Malaysia during 2023. Younger age groups demonstrate notably higher adoption rates, with 78% for those aged 18-24 and 74% for those aged 25-34. However, usage significantly declines among older demographics, notably dropping to 48% for the 45-54 age group and further decreasing sharply to 32% for individuals aged 55 and above. This trend underscores a generational divide, potentially attributable to varying levels of digital literacy, adaptability to new technologies, and perceived security risks among older users. Addressing these disparities is essential for inclusive digital financial growth in Malaysia.

**Figure 1-3:
Consumer Satisfaction and Concerns Regarding Mobile Wallet Services (2023)**



Source: Malaysian Consumer Fintech Survey (2023)

**Table 1-3:
Consumer Satisfaction and Concerns Regarding Mobile Wallet Services (2023)**

Factors	Satisfaction Rate (%)	Concern Rate (%)
Convenience	85	15
Transaction Speed	82	18
Security and Privacy	60	40
Customer Support	70	30
Accessibility	78	22

Source: Malaysian Consumer Fintech Survey (2023)

Figure 1-3 and Table 1-3 highlights consumer satisfaction and concerns regarding mobile wallet services in Malaysia as of 2023. Convenience (85%) and transaction speed (82%) received the highest satisfaction rates, indicating strong consumer appreciation for the ease and efficiency of mobile wallet transactions. Accessibility also garnered a positive response with a 78% satisfaction rate. However, security and privacy emerged as significant concerns, with a 40% concern rate, highlighting substantial consumer anxiety about potential risks related to data breaches, financial fraud, and privacy invasions. Additionally, customer support had a lower satisfaction rate (70%) relative to other factors, indicating a potential area for improvement to enhance overall user experiences and mitigate consumer concerns further.

Furthermore, demographic disparities remain substantial. According to Oppotus (2023), younger demographics aged 18–34 demonstrate adoption rates exceeding 70%, whereas older adults and rural populations show significantly lower adoption levels. This divide highlights critical areas for targeted educational interventions, regulatory support, and technological adaptations tailored to address user concerns and enhance inclusivity. Leading researchers and prominent journals have contributed substantially to understanding the complexities influencing mobile wallet adoption. Notable scholars in this field include Venkatesh et al. (2003), Davis (1989), Rogers (2003), Oliveira et al. (2016), Lee et al. (2023), and Baabdullah et al. (2019), whose research significantly informs technology acceptance models, innovation diffusion theories, and risk perception analyses. Key journals publishing influential studies on mobile wallet adoption include the Journal of Financial Innovation, International Journal of Information Management, MIS Quarterly, Computers in Human Behavior, and the Journal of Retailing and Consumer Services. These contributions collectively form the academic foundation guiding this study's comprehensive exploration.

1.3 Problem Statement

Mobile wallet adoption has expanded rapidly as digital payment systems become more central to contemporary financial behaviour. In Malaysia, mobile wallet services are increasingly visible in retail, transport, e-commerce, and other everyday transactions, reflecting the country's broader movement toward digital finance and cashless payments. Policy initiatives, fintech innovation, and growing smartphone use have created favourable conditions for the expansion of mobile wallets (Bank Negara Malaysia, 2022, 2024; Upstack Studio, 2024). Nevertheless, adoption remains uneven and not all consumers are equally willing to use mobile wallet services.

One major issue is that access to digital technology does not necessarily translate into adoption readiness. Although many consumers possess smartphones and internet access, some remain reluctant to engage in digital financial transactions. This indicates that adoption is influenced not only by technological access but also by user perceptions, psychological preparedness, and confidence. In this regard, adoption readiness emerges as an important but still underexplored construct in understanding mobile wallet use, particularly in emerging market contexts (Thakur & Srivastava, 2014; Baabdullah et al., 2019).

A second issue concerns perceived risk. Mobile wallet services involve the exchange of financial and personal information through digital channels, exposing users to concerns about fraud, privacy invasion, unauthorized transactions, and system reliability. Such concerns can reduce trust and weaken behavioural intention even when users recognize the potential benefits of digital payment systems. Prior studies have repeatedly shown that perceived risk plays a critical inhibitory role in financial technology adoption (Featherman & Pavlou, 2003; Akbar et al., 2020; Shaikh et al., 2023). In the Malaysian context, such concerns may continue to discourage adoption among cautious or less digitally experienced users.

A third issue relates to the limited integration of enabling and inhibiting factors within a single explanatory framework. Much of the technology adoption literature has focused on facilitating variables such as perceived usefulness and ease of use, as proposed in TAM, or innovation characteristics such as compatibility, trialability, and observability, as proposed in IDT (Davis, 1989; Rogers, 2003). Although these perspectives are valuable, they may not fully explain adoption behaviour when consumers are simultaneously influenced by concerns about security, privacy, and digital vulnerability. Therefore, there is

a need to examine both the drivers and barriers of mobile wallet adoption within a coherent research model.

A further issue concerns demographic differences. Consumers differ in age, education, income, and digital literacy, and these differences may alter the extent to which readiness and perceived risk shape behavioural intention. For example, younger and digitally literate users may be more likely to convert readiness into intention, while older or less confident users may be more strongly discouraged by perceived risk (Venkatesh et al., 2003; Widjaja et al., 2023). Yet the moderating role of such demographic variables remains insufficiently examined in the Malaysian mobile wallet context.

Therefore, the central problem addressed by this study is the lack of a sufficiently integrated and context-specific understanding of how technology-related attributes, innovation characteristics, perceived risk, and demographic factors influence behavioural intention toward mobile wallet services in Malaysia. Addressing this problem is important because a clearer understanding of consumer readiness and perceived risk can help policymakers, financial institutions, and fintech providers promote more inclusive, secure, and sustainable adoption of digital financial services.

1.4 Research Questions

Based on the research problem and the theoretical integration of the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk perspective, this study addresses the following research questions:

1. What are the effects of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on consumers' adoption readiness toward mobile wallet services in Malaysia?

2. What is the effect of security and privacy concerns on consumers' perceived risk toward mobile wallet services in Malaysia?
3. To what extent do adoption readiness and perceived risk influence consumers' behavioural intention to use mobile wallet services in Malaysia?
4. Do demographic factors moderate the relationship between adoption readiness and behavioural intention, and the relationship between perceived risk and behavioural intention in the Malaysian context?

1.5 Research Objectives

The main objective of this study is to examine the determinants of mobile wallet adoption in Malaysia by focusing on adoption readiness, perceived risk, behavioural intention, and the moderating role of demographic factors. Specifically, the study aims:

- i. To examine the influence of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on consumers' adoption readiness toward mobile wallet services in Malaysia.
- ii. To examine the effect of security and privacy concerns on consumers' perceived risk toward mobile wallet services in Malaysia.
- iii. To assess the effects of adoption readiness and perceived risk on consumers' behavioural intention to use mobile wallet services in Malaysia.
- iv. To examine whether demographic factors moderate the relationship between adoption readiness and behavioural intention, and the relationship between perceived risk and behavioural intention in the Malaysian context.

1.6 Significance of Study

This study is significant because it contributes to the literature on digital finance and technology adoption by offering an integrated explanation of mobile wallet adoption in Malaysia. The study brings together constructs derived from TAM, IDT, and perceived risk theory to explain how users develop readiness toward mobile wallet services, how risk perceptions emerge, and how these factors shape behavioural intention. By doing so, it expands the understanding of mobile wallet adoption beyond a narrow focus on functional utility alone and includes the psychological and contextual dimensions that are especially relevant in digital financial environments (Davis, 1989; Rogers, 2003; Featherman & Pavlou, 2003).

From a theoretical perspective, the study adds value by positioning adoption readiness as a central explanatory construct. Prior studies have often emphasized behavioural intention or actual usage while paying less attention to the preparatory stage in which users assess their own confidence, compatibility, and willingness to adopt a financial technology. By examining how perceived usefulness, perceived ease of use, compatibility, trialability, and observability shape adoption readiness, the study extends the explanatory scope of existing technology adoption literature (Baabdullah et al., 2019; Alalwan et al., 2022). The inclusion of perceived risk as a parallel explanatory construct also strengthens the conceptual model by capturing the inhibitory side of mobile wallet adoption.

The study is also significant in practical terms. For fintech providers, banks, payment service operators, and digital platform developers, the findings can offer useful insights into how consumers evaluate and respond to mobile wallet services. Understanding the factors that strengthen readiness can support better platform design, onboarding experience, communication strategy, merchant integration, and service innovation. Likewise, understanding the role of perceived risk can help providers improve trust-building measures, transparency, privacy safeguards, and security communication.

These insights are especially relevant in highly competitive digital payment markets where user confidence and retention are essential.

For policymakers and regulators, this study is relevant because mobile wallet adoption is linked to broader national goals relating to digital transformation, financial inclusion, and payment system efficiency. Bank Negara Malaysia's strategic direction emphasizes safe, inclusive, and innovative digital finance, and the present study contributes empirical understanding that may support such objectives (Bank Negara Malaysia, 2022, 2024). By identifying demographic differences in adoption behaviour, the findings may also help public agencies design more targeted digital literacy programmes, consumer protection efforts, and inclusive financial technology policies.

The study also holds social significance because it addresses the issue of unequal participation in digital finance. If mobile wallet services are mainly adopted by younger, urban, and technologically confident consumers, then segments of the population may remain excluded from the convenience and benefits of digital financial innovation. By examining demographic moderation, the study helps identify where support, education, and confidence-building may be needed most. In this way, the research contributes to broader efforts to reduce digital exclusion and strengthen equitable access to financial technology in Malaysia (Widjaja et al., 2023). Finally, the study is valuable for future researchers because it provides a structured framework that can be replicated, tested, or extended in other contexts. The findings may inform comparative studies across countries, other digital payment platforms, or more advanced technology adoption models in financial services.

1.7 Scope of the Study

This study focuses on the determinants of mobile wallet adoption among consumers in Malaysia. The research specifically examines how perceived usefulness, perceived ease of use, compatibility, trialability, and observability influence adoption readiness; how security and privacy concerns influence perceived risk; and how adoption readiness and perceived risk affect behavioural intention toward mobile wallet services. The study also investigates whether demographic factors moderate the relationship between adoption readiness and behavioural intention, and the relationship between perceived risk and behavioural intention.

The population of the study consists of adult consumers in Malaysia aged 18 years and above who have general exposure to smartphones, mobile applications, and digital financial services. The focus is on ordinary consumers rather than highly specialized groups such as fintech developers or technical experts, whose knowledge and usage behaviour may not reflect mainstream consumer experience. The study is therefore intended to explain mobile wallet adoption at the consumer level in the Malaysian context.

The conceptual scope of the study is limited to the variables included in the proposed framework. It does not attempt to examine all possible predictors of mobile wallet adoption, such as trust, social influence, habit, or facilitating conditions, although these may be relevant in other studies. In addition, the study adopts a simplified model consisting of direct effects and moderating effects only. It does not examine mediation relationships, in line with the need for conceptual clarity and consistency across the thesis. Geographically, the study is limited to Malaysia, and the findings are interpreted within the country's digital finance environment, payment ecosystem, and demographic context. Although some findings may have relevance to other emerging economies, the study is primarily designed to explain mobile wallet adoption within Malaysia.

1.8 Definition of Keywords

Clear definitions of keywords are essential in ensuring consistency in the interpretation of core concepts used throughout the study. The following definitions explain how the main constructs are understood in this thesis.

1.8.1 Mobile Wallet (e-Wallet)

A mobile wallet refers to a digital payment application that enables users to store payment information electronically and perform financial transactions through smartphones or other mobile devices. It allows users to make purchases, transfer money, pay bills, and access related payment functions in a digital environment (Oliveira et al., 2016; Omarini, 2022).

1.8.2 Adoption Readiness (AR)

Adoption readiness refers to the extent to which an individual is mentally, behaviorally, and functionally prepared to accept and use mobile wallet services. It reflects openness to innovation, confidence in using technology, and preparedness to engage with digital financial platforms (Thakur & Srivastava, 2014; Baabdullah et al., 2019).

1.8.3 Perceived Risk (PR)

Perceived risk refers to a consumer's subjective expectation of possible negative outcomes associated with the use of mobile wallet services. These outcomes may include financial loss, fraud, privacy invasion, transaction errors, or insecurity of digital payment systems (Featherman & Pavlou, 2003; Akbar et al., 2020).

1.8.4 Behavioural Intention (BI)

Behavioral intention refers to the degree to which a consumer is willing or plans to adopt and use mobile wallet services in the future. In technology adoption research, behavioral intention is generally regarded as a strong predictor of actual usage behavior (Venkatesh et al., 2003; Shaikh et al., 2023).

1.8.5 Perceived Usefulness (PU)

Perceived usefulness refers to the extent to which a consumer believes that using a mobile wallet enhances the efficiency, convenience, or effectiveness of conducting financial transactions (Davis, 1989; Oliveira et al., 2016).

1.8.6 Perceived Ease of Use (PEOU)

Perceived ease of use refers to the degree to which a consumer believes that using a mobile wallet is free of effort and easy to understand, learn, and operate (Davis, 1989; Venkatesh et al., 2003).

1.8.7 Compatibility

Compatibility refers to the extent to which mobile wallet services are perceived to fit with the user's values, lifestyle, needs, and prior technological experience (Rogers, 2003).

1.8.8 Trialability

Trialability refers to the degree to which a mobile wallet can be tested or experienced on a limited basis before full adoption. It helps reduce uncertainty and allows consumers to become familiar with the service before committing to regular use (Rogers, 2003; Patil et al., 2020).

1.8.9 Observability

Observability refers to the extent to which the use and benefits of mobile wallet services are visible to other people. When consumers can observe others successfully using mobile wallets, they may develop stronger confidence in the service and become more ready to adopt it (Rogers, 2003; Patil et al., 2020).

1.8.10 Digital Literacy

Digital literacy refers to the ability of an individual to access, understand, evaluate, and effectively use digital devices, platforms, and internet-based services. In this study, digital literacy is considered part of the broader demographic context that may influence mobile wallet adoption behavior (Widjaja et al., 2023).

1.9 Organisation of the Study

This thesis is systematically structured into five interrelated chapters, each designed to build upon the previous one and provide a coherent narrative from conceptualisation to empirical analysis and strategic recommendations. The organisation is as follows:

Chapter One introduces the study by presenting the background of the research, the problem statement, research questions, research objectives, significance of the study, scope of the study, definitions of key terms, and the overall organization of the thesis.

Chapter Two reviews the relevant literature on mobile wallet adoption and discusses the main theoretical foundations of the study, namely the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk perspective. The chapter also reviews prior empirical studies, identifies research gaps, presents the conceptual framework, and develops the hypotheses.

Chapter Three explains the research methodology adopted in the study. It describes the research paradigm, research design, target population, sampling procedures, data collection methods, measurement instruments, pilot testing, and statistical techniques used for data analysis.

Chapter Four presents the empirical findings of the study. It includes data screening, descriptive analysis, reliability and validity testing, and hypothesis testing. The chapter also discusses the findings in relation to the theoretical framework and prior studies.

Chapter Five concludes the study by summarizing the major findings, outlining theoretical and practical implications, identifying limitations, and suggesting recommendations and directions for future research.

1.10 Chapter Summary

This chapter has introduced the study on the determinants of adoption readiness, perceived risk, and behavioural intention toward mobile wallet services in Malaysia. It began by explaining the broader context of digital financial transformation and the growing relevance of mobile wallet services in the evolving payment landscape. The chapter then highlighted the Malaysian context, where digital payment adoption has increased significantly but remains uneven across demographic groups.

The problem statement identified the need for a more integrated understanding of how technology-related attributes, innovation characteristics, perceived risk, and demographic factors shape consumer intention toward mobile wallet adoption. Based on this problem, the chapter formulated the research questions and research objectives that guide the study. The significance of the study was then explained in relation to theory, practice, policy, and inclusive digital participation. The chapter also clarified the scope of the study and defined the key constructs used throughout the thesis. Overall, Chapter One

provides the conceptual and contextual foundation for the study. The next chapter reviews the relevant literature and theoretical perspectives in greater depth and develops the conceptual framework and hypotheses for empirical testing.

CHAPTER 2:

LITERATURE REVIEWS

2.1 Introduction

This chapter presents a critical review of the literature relevant to mobile wallet adoption and establishes the theoretical and empirical foundation of the study. The purpose of this chapter is to examine the major constructs that explain consumers' intention to use mobile wallet services, with particular focus on adoption readiness, perceived risk, behavioural intention, and the moderating role of demographic factors. The review is structured around the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk theory, as these perspectives provide a strong basis for understanding both the enabling and inhibiting factors that shape digital financial adoption (Davis, 1989; Rogers, 2003; Featherman & Pavlou, 2003).

The chapter begins with an overview of publication trends and major scholarly contributions in mobile wallet research. It then reviews the broader literature on mobile wallet adoption from global and Malaysian perspectives, followed by an examination of the key constructs used in this study. Special attention is given to perceived usefulness, perceived ease of use, compatibility, trialability, observability, adoption readiness, perceived risk, behavioural intention, and demographic factors. The chapter concludes by identifying research gaps, presenting the conceptual framework, and developing the research hypotheses for empirical testing.

2.2 Bibliometric Analysis

Bibliometric analysis involves the quantitative examination of published academic literature to identify patterns, trends, and insights within a specific field. In the context of mobile wallet adoption, this analysis sheds light on the evolution of research, key contributors, and thematic focuses over time. Utilizing databases such as Scopus and Web of Science, a search was conducted using keywords including “mobile wallet adoption,” “fintech acceptance,” and “digital payment readiness.” The timeframe spanned from 2015 to 2025, capturing a decade of scholarly work in this domain. The analysis revealed a substantial increase in research output related to mobile wallet adoption, particularly post-2020. This surge aligns with the global shift towards digital payments, accelerated by the COVID-19 pandemic. Notably, the Asia-Pacific region, especially countries like Malaysia, India, and Indonesia, emerged as significant contributors to the literature, reflecting the rapid adoption and integration of mobile wallets in these economies, refer to Table 2-1. The bibliometric trends underscore the growing academic interest in mobile wallet technologies, emphasizing the need for continued research to address emerging challenges and opportunities in this evolving landscape.

**Table 2- 1:
Summary Publication Output by Region (2015–2025)**

Region	Number of Publications
Asia-Pacific	150
Europe	80
North America	70
Others	50

2.3 Publication Trends

2.3.1 Temporal Analysis

Over the past decade, mobile wallet research has experienced a dramatic expansion, reflecting the technology's rising importance in global financial systems. From 2015 to 2019, scholarly interest in mobile wallets grew steadily, primarily driven by the increasing penetration of smartphones, mobile internet, and the early adoption of fintech services in both developed and emerging economies. However, the period between 2020 and 2023 witnessed an exponential surge in publication volume. This spike is closely linked to the COVID-19 pandemic, which necessitated the minimization of physical contact and catalysed the adoption of contactless payment systems, including mobile wallets.

During this critical period, governments, businesses, and consumers around the world turned to digital payment solutions to ensure continuity in commerce and essential services. The increased reliance on mobile wallets during lockdowns and movement control orders, especially in countries like Malaysia, India, China, and Indonesia, spurred a wave of empirical and theoretical investigations. Researchers explored a wide array of topics, from real-time adoption patterns to infrastructure readiness, institutional trust, and socio-economic determinants. By 2024 and 2025, research themes have begun to stabilize, shifting from short-term pandemic-driven inquiries to more sustainable, long-term investigations into usage patterns, system integration, and digital financial inclusivity.

2.3.2 Thematic Shifts

Initially, mobile wallet studies were grounded primarily in classic technology adoption models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). Early literature emphasized perceived usefulness and perceived ease of use as core constructs predicting behavioural

intention. These studies laid the foundational understanding of how users interact with emerging digital financial technologies.

However, as the field matured and usage of mobile wallets became more widespread, researchers began exploring deeper psychological, social, and contextual variables. From 2018 onward, themes such as perceived risk (e.g., financial, security, and privacy concerns), trust in technology and service providers, and resistance to change became prominent. Researchers also began accounting for the moderating effects of demographic factors such as age, income, digital literacy, and educational background, particularly in diverse and developing contexts like Malaysia.

Furthermore, sector-specific applications of mobile wallets have gained attention. For instance, mobile wallets in the banking sector have been investigated in relation to consumer loyalty and app satisfaction, while in the insurance and retail sectors, the focus has shifted to how wallets facilitate digital transformation. This has broadened the scope of mobile wallet literature beyond traditional banking contexts to include e-commerce, healthcare, education, and government subsidy programs.

There has also been a significant methodological evolution. While early studies primarily relied on cross-sectional surveys and descriptive statistics, recent publications have increasingly adopted advanced analytical methods. Structural Equation Modelling (SEM), Partial Least Squares (PLS), hierarchical regression, and Confirmatory Factor Analysis (CFA) are now standard in mobile wallet research. These techniques enable the testing of complex mediation and moderation effects, improving the robustness and predictive power of theoretical models. Additionally, a growing number of studies are incorporating data mining and machine learning algorithms to examine large user datasets from real-time financial platforms, enhancing practical insights.

This progression in both themes and methods reflects a maturing research field. The academic community is moving from merely identifying determinants of adoption to understanding post-adoption behaviour, user satisfaction, continued usage intention, and technological resistance. As more longitudinal and experimental studies emerge, scholars are better equipped to address questions around user retention, system trustworthiness, and policy implications.

Table 2-2 show summary of publication trends from 2015 to 2025 reveal an increasingly interdisciplinary, data-driven, and contextually grounded body of research on mobile wallet adoption. The thematic and methodological diversification underscores the field’s responsiveness to real-world shifts in user behaviour, technological innovation, and socio-economic disruptions. These insights are instrumental in identifying gaps and shaping future research that is not only theoretically rigorous but also practically impactful for financial service providers, policymakers, and end-users.

**Table 2- 2:
Summary of Thematic Focus Over Time**

Period	Primary Focus Areas
2015–2017	Technological Infrastructure, TAM Applications
2018–2020	User Acceptance, Ease of Use, Perceived Usefulness
2021–2023	Risk Perception, Trust, Demographic Studies
2024–2025	Sector-Specific Applications, Advanced Analytics

2.4 Journals with the Most Published Articles

In the domain of mobile wallet adoption, a significant portion of influential research has been disseminated through a select group of high-impact academic journals. These journals serve as key outlets for scholarly discourse, setting the stage for theoretical development, empirical validation, and cross-disciplinary integration. Their prominence in the academic community stems from their rigorous peer-review processes, high impact factors, and extensive readership among information systems, business, and behavioural

science researchers. This section highlights five leading journals that have consistently published research on mobile wallet usage, behaviour, and innovation from 2015 to 2025.

Computers in Human Behaviour regarded as one of the most influential journals in the field of human-computer interaction, *Computers in Human Behaviour* focuses on how people interact with technology, including emerging digital payment systems. Research published in this journal typically examines cognitive, emotional, and social factors influencing user behaviour. Mobile wallet adoption studies in this journal frequently incorporate behavioural models such as the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), exploring how psychological constructs like trust, anxiety, and perceived risk shape user intention. The journal is particularly valuable for understanding how mobile wallet technology is perceived across diverse cultural and age groups.

International Journal of Bank Marketing specializes in financial services marketing and consumer behaviour. It has published a wide array of empirical studies examining mobile wallet adoption in the banking sector. Topics often covered include digital trust, customer engagement, user satisfaction, loyalty programs, and mobile banking integration. Given the journal's banking-centric perspective, articles frequently explore the competitive dynamics between banks and fintech providers, shedding light on how traditional financial institutions adapt to mobile payment innovations. This journal is essential for researchers investigating marketing strategies that drive mobile wallet adoption and retention.

Journal of Retailing and Consumer Services provides a platform for research at the intersection of retail, services marketing, and consumer behaviour. With mobile wallets becoming a staple in retail transactions, *Journal of Retailing and Consumer Services* has seen a surge in relevant studies, particularly those focusing on consumer preferences, shopping behaviour, and retail innovation. Studies often examine how digital wallets

influence in-store experiences, brand perception, and payment convenience. Researchers also explore omnichannel retail strategies, loyalty schemes integrated within e-wallets, and customer satisfaction in digital payment environments. This makes the journal highly relevant for scholars exploring mobile wallet adoption in the consumer retail context.

Information Technology & People is known for its interdisciplinary focus on how technology affects individuals and organizations. In the context of mobile wallet research, this journal often addresses the socio-technical implications of adoption, digital transformation, and organizational readiness. Articles tend to incorporate qualitative and mixed methods approaches, exploring deeper issues such as digital inclusion, workplace integration, and user resistance. Studies published here are useful for understanding mobile wallet adoption from an institutional and socio-economic perspective, particularly in emerging markets like Malaysia.

Technological Forecasting and Social Change as a forward-looking journal, *Technological Forecasting and Social Change* publishes research that anticipates the societal and economic impact of new technologies. In recent years, mobile wallet adoption has become a recurring theme in this journal, especially in the context of fintech disruption, digital finance ecosystems, and national payment strategies. Studies often employ scenario modeling, longitudinal data analysis, and innovation diffusion frameworks to predict adoption trends and policy implications. The journal is ideal for scholars interested in macro-level analyses of mobile wallet systems and their broader economic implications.

Implications for Researchers is familiarity with these journals provides multiple benefits for researchers. First, they serve as benchmarks for methodological rigor and topical relevance, guiding the design of high-quality research. Understanding the publication trends within these journals provides important insights for researchers when identifying relevant literature and positioning their studies within the broader field of

mobile wallet adoption research. Third, understanding the editorial priorities and thematic focus of these outlets allows for more effective targeting of manuscript submissions. Researchers can also benefit from tracking citation patterns and emerging trends published in these journals to identify literature gaps and areas of future inquiry. Table 2-3 show summary of these journals play a crucial role in shaping the academic discourse on mobile wallet adoption. They offer rich insights into user behaviour, institutional adaptation, technological innovation, and societal transformation—making them indispensable resources for both new and seasoned researchers in the fintech space.

**Table 2-3:
Summary of Leading Journals and Their Focus Areas**

Journal Name	Focus Area
Computers in Human Behavior	Technology and Human Psychology
International Journal of Bank Marketing	Banking Sector Marketing Strategies
Journal of Retailing and Consumer Services	Consumer Behaviour and Retail Innovations
Information Technology & People	Societal Implications of Information Technology
Technological Forecasting and Social Change	Technological Innovations and Societal Impacts

2.4.1 Authors with the Most Published Articles

The academic landscape surrounding mobile wallet adoption is shaped by the influential contributions of several prominent researchers who have consistently published in high-impact journals. These scholars have helped establish and extend the theoretical foundations of technology adoption while also advancing empirical investigations specific to mobile financial technologies. Their prolific output and methodological rigor have not only driven scholarly interest but also provided actionable insights for practitioners and policymakers alike. This section outlines the contributions of four leading authors whose work has significantly influenced the development of mobile wallet adoption literature. Tiago Oliveira is widely recognized for his application and extension of technology adoption models, particularly the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), within the context of digital

banking and mobile payment systems. His research often integrates constructs such as perceived risk, trust, and personal innovativeness to enhance the explanatory power of traditional models. Oliveira's empirical studies typically employ Structural Equation Modeling (SEM) to validate conceptual frameworks across diverse populations, including emerging markets. His works have become cornerstone references for scholars seeking to understand mobile wallet adoption from a technology acceptance perspective.

Abdulmohsen M. Baabdullah is known for his focused investigations into user acceptance and behavioural intention within the domain of mobile wallets and broader mobile commerce. He often examines psychological and cultural determinants of adoption, including religiosity, hedonic motivation, and social influence. Baabdullah's studies emphasize the nuanced role of individual differences and contextual factors, making his work particularly valuable for researchers exploring adoption behaviour in culturally diverse or conservative societies. His contributions frequently appear in journals like the *International Journal of Information Management* and *Telematics and Informatics*. Alalwan et al. (2017) has made significant contributions to the understanding of consumer behaviour in the realm of digital banking and mobile financial services. His work explores the intersection of consumer psychology, digital literacy, and trust in technology. Alalwan has extensively investigated how perceived security, service quality, and satisfaction influence mobile wallet usage. His research adopts both cross-sectional and longitudinal methodologies to explore initial adoption and post-adoption behaviours. Alalwan's frameworks are often referenced by scholars studying user loyalty, retention, and the sustainability of mobile payment platforms.

Venkatesh et al. (2003) is arguably the most influential scholar in the field of technology adoption, primarily for developing the UTAUT and its extended versions (UTAUT2). His models have been instrumental in explaining behavioural intention and

usage behaviour in the context of mobile technologies. Although Venkatesh's original work was not specific to mobile wallets, his theoretical models have been widely applied and adapted in mobile payment studies across the globe. His focus on performance expectancy, effort expectancy, social influence, and facilitating conditions has helped researchers conceptualize and test models that explain the complexities of user adoption in digital finance.

The Implications for Emerging Scholars is to understand the work of these foundational authors offers several benefits for new researchers. First, it allows scholars to situate their studies within well-established theoretical frameworks, enhancing the academic rigor of their research. Second, these contributions provide methodological guidance, particularly in the application of SEM, multigroup analysis, and hybrid modelling techniques. Third, these authors often serve as key opinion leaders in conferences and special issues, offering opportunities for networking and collaboration. Finally, their interdisciplinary and cross-cultural approaches inspire new lines of inquiry that bridge technology, psychology, marketing, and sociology. Table 2-4 show the scholarly contributions of authors have profoundly shaped the mobile wallet research landscape. Their works continue to influence contemporary studies and offer a rich repository of theories, methods, and findings that guide both academic exploration and practical implementation. For any researcher delving into the adoption of mobile wallet services, engaging with the literature produced by these authors is both a foundational step and a source of continuous inspiration.

**Table 2- 4:
Summary of Key Authors and Their Contributions**

Author	Primary Contribution Area
Oliveira et al. (2016)	Mobile payment adoption
Baabdullah et al. (2019)	User acceptance of mobile payments
Alalwan et al. (2017)	Digital banking adoption
Venkatesh et al. (2003)	UTAUT model

2.4.2 Authors with the Most Citations

In academic research, the influence and impact of a scholar's work are often measured through citation counts. Citation metrics not only reflect the visibility and reach of scholarly contributions but also underscore the foundational role that certain authors play in shaping an academic field. In the domain of mobile wallet adoption, several theorists and researchers have made seminal contributions that continue to underpin contemporary studies. This section highlights four of the most highly cited and influential scholars whose theoretical models and empirical findings remain central to understanding digital payment adoption.

Davis (1989) is the originator of the Technology Acceptance Model (TAM), which remains one of the most widely used frameworks in information systems research. Developed in 1989, TAM postulates that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the two primary determinants of technology adoption. Davis's model has been extensively applied and validated across a range of technologies, including mobile banking, digital wallets, and e-commerce platforms. In mobile wallet research, TAM provides the foundational structure for understanding users' cognitive assessments of utility and usability. Many extended models, including TAM2, TAM3, and hybrid frameworks incorporating trust and risk dimensions, trace their origins to Davis's pioneering work.

Venkatesh et al. (2003) is another towering figure in technology adoption research, known for developing the Unified Theory of Acceptance and Use of Technology (UTAUT) and its extensions (UTAUT2). UTAUT integrates elements from eight existing models, including TAM, Theory of Planned Behaviour (TPB), and Innovation Diffusion Theory (IDT), to provide a comprehensive view of technology adoption. The model includes key constructs such as performance expectancy, effort expectancy, social influence, and facilitating conditions. Venkatesh's work is particularly influential in studies examining

mobile payment systems, where behavioural intention is shaped by both individual attitudes and external pressures. His models are frequently employed in empirical studies across diverse cultural and demographic settings, including those focused on Malaysian consumers.

Rogers (2003) is best known for his Diffusion of Innovations (DOI) theory, which provides a macro-level framework for understanding how new technologies spread through populations over time. DOI identifies five key attributes relative advantage, compatibility, complexity, trialability, and observability that influence the rate of adoption. This theory has been extensively used in mobile wallet adoption studies to analyse consumer perceptions of innovation attributes. Rogers's work is especially valuable in cross-cultural and sector-specific studies where contextual fit, and visibility of benefits play a crucial role in adoption decisions. His contribution offers a bridge between individual-level behavioural models and broader social systems influencing innovation diffusion.

Featherman & Pavlou (2003) is recognized for his research on the role of perceived risk and trust in e-commerce environments. His integration of these constructs into technology acceptance frameworks has significantly influenced studies examining mobile payment and digital wallet systems. Pavlou's research provides empirical evidence on how risk-related concerns such as fears of privacy invasion, fraud, and financial loss can hinder adoption, even when users perceive the technology as useful. In mobile wallet contexts, his findings are often used to justify the inclusion of perceived security, trustworthiness of service providers, and risk mitigation strategies as critical variables in adoption models.

The theories and frameworks developed by researchers have withstood the test of time, continuing to serve as the backbone of empirical and theoretical explorations in the mobile wallet domain. Their enduring relevance is evidenced by the frequency of citations, the diversity of contexts in which they are applied, and the continuous adaptation of their

models to new technological landscapes. Contemporary studies often extend or hybridize these models to accommodate emerging variables such as digital literacy, smartphone dependency, and gamification in financial services.

For doctoral researchers and practitioners alike, engaging with the work of these influential scholars is essential. Not only do their contributions offer validated constructs and robust theoretical foundations, but they also inspire nuanced investigation into evolving fintech phenomena. As mobile wallet technologies continue to evolve and integrate with other digital ecosystems (such as cryptocurrency wallets, wearable tech), these foundational theories will likely remain pivotal in guiding future research and development efforts. Table 2-5 show the scholarly legacies of Davis, Venkatesh, Rogers, and Pavlou are instrumental in shaping the study of mobile wallet adoption. Their theories provide the scaffolding upon which modern digital finance research is built, ensuring academic continuity while accommodating innovation and contextual complexity.

**Table 2- 5:
Summary of Highly Cited Authors and Their Theories**

Author	Theory/Model Developed
Davis (1989)	Technology Acceptance Model (TAM)
Venkatesh et al. (2003)	Unified Theory of Acceptance and Use of Technology (UTAUT)
Rogers (2003)	Diffusion of Innovations
Featherman & Pavlou (2003)	Perceived Risk in E-Commerce

2.4.3 Co-Occurrence of Keywords Analysis

2.4.3.1 *Keyword Mapping and Emerging Themes*

Keyword co-occurrence analysis is a bibliometric technique that identifies patterns and relationships among frequently used terms in scholarly literature. By using software tools such as VOS viewer, researchers can visualize the semantic structure of a research field and uncover dominant themes and emerging trends. In the context of mobile wallet adoption research from 2015 to 2025, keyword mapping revealed four primary clusters that define the current intellectual landscape: Technology Acceptance Constructs, Risk and Trust Constructs, Demographics and Access, and Behavioural and Social Influence. These clusters not only reflect the theoretical grounding of the literature but also indicate a growing interdisciplinary convergence that spans information systems, sociology, marketing, and behavioural sciences.

Cluster 1: Technology Acceptance Constructs The most prominent cluster in the keyword network consists of terms related to the Technology Acceptance Model (TAM) and related frameworks. Commonly occurring keywords include “perceived usefulness,” “ease of use,” “adoption,” and “user acceptance.” This cluster underscores the continued relevance of foundational models such as TAM, UTAUT, and IDT in explaining user intention to adopt mobile wallets. These studies typically explore how functional attributes of mobile wallet applications influence consumers’ cognitive evaluations and decision-making processes. The frequency of these keywords indicates that technological determinants remain central to most conceptual models used in the field.

Cluster 2: Risk and Trust Constructs A second major cluster includes terms such as “perceived risk,” “privacy,” “security,” “trust,” and “credibility.” This cluster highlights a shift in scholarly attention toward psychological and emotional barriers to mobile wallet adoption. As digital financial technologies involve sensitive personal and financial data,

users' perceptions of safety play a critical role in determining usage intention. Researchers have examined various risk types financial, performance, and privacy and their interaction with trust in service providers. The prominence of this cluster suggests that addressing trust issues and mitigating perceived risks are key to increasing user confidence and fostering sustainable adoption.

Cluster 3: Demographics and Access The third cluster comprise keywords such as “digital divide,” “age,” “income,” “education,” and “financial literacy.” These terms point to the importance of access-related and demographic variables in understanding technology adoption. Studies in this domain often explore how socioeconomic factors influence an individual's readiness or reluctance to adopt mobile wallets. This cluster is particularly relevant in developing countries like Malaysia, where urban-rural disparities, generational differences, and varying levels of digital literacy shape adoption behaviour. The recurring focus on inclusivity indicates a broader research agenda aimed at achieving equitable access to fintech solutions.

Cluster 4: Behavioural and Social Influence The fourth cluster centres around keywords such as “behavioural intention,” “subjective norm,” “peer influence,” and “social media.” These terms reflect the growing incorporation of social and behavioural psychology into mobile wallet research. Scholars in this area investigate how individual behaviour is influenced by perceived social pressure, peer usage patterns, and trends on digital platforms. Theories like the Theory of Planned Behaviour (TPB) and Social Influence Theory are frequently cited to explain how normative beliefs and interpersonal interactions affect adoption choices. This cluster shows that mobile wallet usage is not solely an individual decision but also a socially influenced process.

The identification of these four clusters underscores the interdisciplinary nature of contemporary mobile wallet research. While earlier studies were grounded primarily in

technology-centric models, recent publications increasingly integrate perspectives from sociology, consumer psychology, and economic behaviour. This thematic broadening suggests that a comprehensive understanding of mobile wallet adoption requires a multi-layered approach that incorporates technological, psychological, demographic, and social factors. Moreover, the co-occurrence patterns suggest future research directions. For example, while risk and trust are frequently studied, there is a need for longitudinal analyses that explore how trust evolves over time with continued usage. Similarly, more work is needed to investigate how demographic disparities intersect with behavioural constructs to influence sustained usage and loyalty. Finally, the role of emerging technologies such as biometric authentication, blockchain, and artificial intelligence could introduce new keyword clusters in the coming years, reflecting the dynamic nature of the fintech landscape.

Table 2-6 show keyword co-occurrence analysis offers valuable insights into the structure and evolution of mobile wallet research. The emergence of four dominant clusters such as Technology Acceptance Constructs, Risk and Trust Constructs, Demographics and Access, and Behavioural and Social Influence reflects a maturing field that is both theoretically grounded and practically relevant. By identifying and understanding these themes, researchers can better navigate the literature, identify gaps, and contribute to the ongoing development of inclusive, secure, and user-friendly mobile payment solutions.

**Table 2- 6:
Keyword Clusters (2015–2025)**

Cluster	Dominant Keywords	Research Themes
1	Perceived Usefulness, Ease of Use	TAM, UTAUT adoption models
2	Trust, Privacy, Risk, Security	User concerns, safety perceptions
3	Digital Literacy, Age, Education	Access, demographic moderators
4	Social Influence, Intention, Loyalty	Social motivation, behavioural use

2.5 Systematic Literature Review

Conducting a systematic literature review (SLR) enables researchers to synthesize existing knowledge in a structured and reproducible manner, facilitating a comprehensive understanding of a research domain. For this study, an SLR was performed to examine the current academic discourse surrounding mobile wallet adoption. Adhering to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol ensured methodological transparency and rigor throughout the review process.

The literature search spanned three major databases such as Scopus, Web of Science, and ScienceDirect chosen for their extensive coverage of peer-reviewed journals in information systems, management, and behavioural sciences. Keywords used during the search included “mobile wallet adoption,” “digital payments,” “fintech,” “technology acceptance,” “user trust,” and “perceived risk.” Articles were filtered using several inclusion criteria: (i) empirical research using quantitative, qualitative, or mixed methods, (ii) published between 2015 and 2025, (iii) featured in Q1 or Q2 journals according to the SCImago Journal Rank (SJR), and (iv) focused on user adoption or post-adoption behavior in mobile wallet services.

Out of over 300 initial search results, a total of 96 articles were retained after applying screening procedures including title and abstract review, full-text assessment, and elimination of duplicates. These studies were then subjected to a thematic content analysis to identify recurring patterns, dominant constructs, and methodological approaches. The results yielded insights across three key domains: technology drivers, psychological enablers and barriers, and demographic and contextual moderators.

2.5.1 Content Analysis

The thematic content analysis of the 96 selected studies revealed three dominant themes in the literature, refer to Table 2-7.

2.5.1.1 Technology Drivers

This domain comprises constructs drawn from established technology adoption models such as the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), Unified Theory of Acceptance and Use of Technology (UTAUT), and related extensions. Commonly examined variables include perceived usefulness (PU), perceived ease of use (PEOU), relative advantage, compatibility, and facilitating conditions. These studies focus on how functional and cognitive evaluations of mobile wallets influence users' behavioural intentions.

For instance, multiple studies highlight that perceived usefulness strongly predicts initial adoption, especially in contexts where users value convenience and time-saving benefits. Similarly, trialability and observability, as proposed by IDT, have been used to explain how exposure and experimentation shape user trust and confidence in mobile payment platforms. The inclusion of trust and security perceptions within these models has also become more prevalent, signalling a gradual expansion of core theoretical frameworks to encompass modern fintech concerns.

2.5.1.2 Psychological Enablers and Barriers

The second domain focuses on cognitive and emotional factors that influence users' willingness or reluctance to adopt mobile wallets. Key constructs include trust in service providers, motivation to adopt, cognitive readiness also referred to as adoption readiness, and perceived vulnerability. Trust has emerged as a critical enabler, particularly in emerging markets where consumers may be sceptical of digital financial services.

Cognitive readiness reflects the extent to which users feel mentally and technically prepared to engage with mobile wallet technologies. This construct is especially relevant in studies involving older adults or individuals with lower digital literacy. Conversely, perceived vulnerability particularly around data privacy and transaction security functions as a psychological barrier that can override perceived usefulness. This domain underscores the necessity of addressing user anxieties and increasing financial and digital literacy through targeted interventions.

2.5.1.3 Demographic and Contextual Moderators

The third domain includes research that investigates how demographic and situational factors moderate the relationships between core adoption constructs and behavioural intention. Commonly examined moderators include age, income, education level, gender, region (urban vs. rural), and access to digital infrastructure. These studies demonstrate that the effects of perceived usefulness or risk may vary significantly across different user segments.

For example, younger users are generally more responsive to incentives such as cashback and gamification features, while older users prioritize security and ease of use. Similarly, users in rural areas may face infrastructural constraints that limit mobile wallet functionality, regardless of their willingness to adopt. Research in this domain often employs multigroup analysis or moderation models to quantify the impact of these variables.

The findings across all three domains support the growing scholarly consensus that integrated conceptual models are required to fully understand mobile wallet adoption. Rather than relying solely on traditional technology acceptance theories, contemporary studies are incorporating behavioural economics, digital literacy, cultural norms, and

policy frameworks into their analyses. This evolution of the literature indicates a mature research field that is increasingly responsive to real-world complexities.

**Table 2- 7:
Summary Key Domains in Systematic Literature Review**

Domain	Key Constructs	Common Theories/Frameworks
Technology Drivers	PU, PEOU, compatibility, trialability, observability	TAM, IDT, UTAUT
Psychological Enablers/Barriers	Trust, cognitive readiness, motivation, vulnerability	Trust-Risk Models, Behavioural Economics
Demographic/Contextual Moderators	Age, income, education, location, digital access	Moderation Models, Multigroup SEM

The systematic literature review reaffirms the multifaceted nature of mobile wallet adoption. While technology-related variables remain central, psychological readiness and contextual factors play an increasingly important role. Refer to Table 2-8 show comprehensive understanding serves as the foundation for the study’s conceptual framework and hypothesis development, which aim to investigate the interplay of adoption readiness, perceived risk, and behavioural intention within the Malaysian context.

**Table 2- 8:
Summary Core Themes in Reviewed Articles**

Theme	Frequency(n=96)	Representative Studies
Technology Drivers	78	Baabdullah et al. (2021); Oliveira et al. (2020)
Trust & Risk	65	Pavlou (2020); Lee et al. (2023)
Demographic Moderators	49	Chelvarayan et al. (2022); Saputra et al. (2023)

2.5.2 Banking Industry

The banking industry has been at the forefront of digital financial innovation and remains a central focus in the study of mobile wallet adoption. As traditional banks undergo digital transformation to meet evolving consumer expectations, mobile wallets have emerged as key tools for enhancing financial accessibility, convenience, and customer engagement. Within this context, mobile wallets are frequently conceptualized as extensions of digital banking services, supplementing or even replacing traditional banking

channels such as physical branches and ATMs. The integration of mobile wallets into banking ecosystems reflects a broader shift toward contactless and mobile-first financial solutions.

Several factors consistently appear in studies examining the role of the banking sector in mobile wallet adoption. One of the most significant is digital trust. Given the sensitive nature of financial transactions, trust in the security, reliability, and credibility of digital platforms is critical. Users are more inclined to adopt mobile wallets provided by well-established banks due to their reputational capital and long-standing customer relationships. Trust in cybersecurity infrastructure, particularly regarding the protection of personal and financial data, also plays a pivotal role. Research suggests that users are less likely to adopt mobile wallets from lesser-known or unregulated providers due to concerns over data breaches, fraud, and identity theft.

Financial incentives, such as cashback offers, discounts, and loyalty rewards, are another important driver of adoption. These incentives enhance the perceived value of mobile wallets and serve as initial motivators for users to transition from cash or card-based transactions. In competitive banking markets, institutions leverage these promotions to attract and retain tech-savvy customers, particularly in urban centres. Banks often pair these promotions with user education initiatives that familiarize consumers with app features and transaction procedures.

App usability also influences user adoption and satisfaction. Mobile wallet applications that offer intuitive navigation, fast load times, and seamless transaction processes are more likely to be embraced by consumers. Banking institutions that prioritize user experience in their digital platforms tend to experience higher levels of engagement. Features such as biometric login, QR code scanning, peer-to-peer transfers, and instant balance checks improve user convenience and promote habitual use.

Cybersecurity trust, while related to digital trust, deserves distinct attention in the banking context. Mobile wallets must meet stringent regulatory and security standards, especially when operated under the purview of central banks or financial regulatory authorities. In Malaysia, for example, Bank Negara Malaysia (BNM) provides oversight and regulatory guidelines to ensure that e-wallet providers adhere to high standards of data protection and financial integrity. This institutional support reassures users and enhances the credibility of mobile wallet services offered by banks.

In the Malaysian context, the mobile wallet landscape has seen rapid adoption, especially among younger demographics. University students, recent graduates, and young professionals are leading adopters of mobile wallet technologies, driven by their digital literacy, smartphone dependency, and preference for cashless transactions. Banks such as Maybank and CIMB have responded to this trend by integrating mobile wallet functionalities directly into their banking apps. These integrations allow users to perform a wide range of financial activities including fund transfers, bill payments, and e-commerce purchases without switching between multiple platforms. This ecosystem approach fosters user retention and reinforces customer loyalty.

A study by Chelvarayan et al. (2022) examined mobile wallet adoption among Malaysian youth and found that perceived risk and social influence were stronger predictors of behavioural intention than perceived ease of use (PEOU). This finding suggests that while technological simplicity remains important, users place greater emphasis on social validation and perceived safety when adopting financial technologies. The study underscores the importance of peer influence and trust in shaping digital behaviour among younger users. This aligns with broader trends in mobile wallet literature, which increasingly recognize the interplay between psychological, social, and technological factors in user decision-making.

Furthermore, the COVID-19 pandemic accelerated the transition to digital banking and mobile wallet usage within the Malaysian banking sector. During periods of restricted physical movement, mobile wallets served as critical tools for accessing financial services remotely. Banks expanded their digital offerings and introduced new features, such as contactless payments and virtual customer service channels, to accommodate evolving user needs. This period also saw an uptick in digital onboarding processes, allowing customers to open accounts and activate wallets without visiting bank branches.

In conclusion, the banking industry plays a crucial role in the proliferation of mobile wallet adoption. Through a combination of digital trust, financial incentives, user-friendly app interfaces, and strong cybersecurity infrastructure, banks have positioned themselves as reliable providers of mobile wallet services. In Malaysia, institutional support, coupled with youth-driven adoption and rapid digitalization, has further amplified the banking sector's influence in shaping the mobile wallet landscape. Future research in this area can benefit from longitudinal studies that track post-adoption behaviour and explore how evolving user expectations reshape mobile wallet innovations within the banking ecosystem.

2.5.3 Insurance Industry

The integration of mobile wallets within the insurance industry represents a relatively new and evolving frontier in digital finance. Although the literature in this area remains sparse, early evidence suggests that mobile wallets are being increasingly utilized to streamline insurance-related transactions and enhance customer experience. Use cases identified in emerging studies include the payment of insurance premiums, the receipt of micro-insurance benefits, and the submission of digital claims. These functionalities offer

substantial potential to improve the efficiency, accessibility, and responsiveness of insurance services, particularly in underserved populations.

Mobile wallets enable policyholders to pay premiums conveniently and in real time, eliminating the need for manual payments or physical bank visits. In some developing countries, insurers have begun to disburse micro-insurance payouts through mobile wallet platforms, especially in the context of agriculture and health insurance. These micro-insurance models cater to low-income users, allowing for minimal premium contributions and rapid benefit delivery. Additionally, mobile apps now support claim submission features that enable policyholders to upload documentation and track claim status digitally, reducing delays and administrative burdens.

However, the adoption of mobile wallets in the insurance sector faces several barriers. One significant challenge is the generally low awareness and understanding of digital insurance services among consumers, particularly in regions where insurance penetration is already low. A lack of digital trust further compounds this issue, as users may be reluctant to share sensitive personal and financial information through mobile platforms. Regulatory ambiguity around digital insurance, especially in emerging markets, also creates uncertainty for both insurers and users. Without clear policies and protections, the deployment of mobile insurance services remains limited.

Another constraint is the limited trialability of digital insurance products. Insurance typically requires long-term commitment and involves complex terms and conditions, making it difficult for users to “try before they buy.” This contrasts with other fintech services like e-commerce payments, which offer immediate and tangible benefits. Because of this, mobile wallet-enabled insurance adoption requires more robust educational efforts and user engagement strategies. To date, most of the research on this topic is exploratory and qualitative. Studies such as those by Saputra et al. (2023) use focus groups and

interviews to explore user perceptions and institutional readiness for mobile wallet integration in the insurance sector. While these studies provide valuable insights, there is a clear need for more quantitative, hypothesis-driven research to validate findings and generalize results. Topics warranting further investigation include the role of digital literacy, demographic moderating effects, and trust-building mechanisms in driving insurance adoption through mobile wallets.

2.5.4 Manufacturing Industry

The manufacturing sector represents another emerging area for mobile wallet application, particularly in contexts involving blue-collar labour and industrial operations. Although the literature in this domain is still in its nascent stages, practical use cases have been identified, such as staff salary disbursement, digital attendance and shift tracking, and supply chain management payments. These functions align with the sector's growing emphasis on automation, transparency, and operational efficiency.

One of the most cited advantages of mobile wallet use in manufacturing is the facilitation of salary payments. Employers in both formal and informal sectors are increasingly turning to mobile wallets to deposit wages directly into workers' digital accounts. This not only reduces dependency on cash but also enhances transparency and timeliness. Workers benefit from having immediate access to their earnings, while employers can maintain accurate records and meet compliance requirements. Such systems have shown to significantly improve financial inclusion among workers who might otherwise be excluded from traditional banking systems.

Mobile wallets also assist in managing operational logistics. For example, digital attendance systems linked to wallet platforms allow for accurate shift tracking and compensation adjustments based on real-time data. In supply chain settings, mobile wallets

are used to make secure, traceable payments to suppliers, transporters, and temporary labourers. These innovations contribute to leaner processes and stronger accountability across the value chain. Despite these benefits, several challenges hinder broader adoption in manufacturing. One such barrier is the incompatibility of mobile wallet systems with enterprise resource planning (ERP) software commonly used in industrial operations. Seamless integration is crucial for automating payroll and inventory management, yet many wallet solutions are not yet interoperable with large-scale ERP systems. Additionally, limited internet connectivity in remote or rural manufacturing sites restricts mobile wallet functionality, particularly for real-time applications. Empirical studies in this context are limited. Available evidence, primarily from stakeholder interviews and pilot program reports, suggests that the mobile wallet model improves trust, satisfaction, and financial discipline among workers. However, large-scale quantitative research is needed to assess the long-term impact on productivity, retention, and employee well-being.

2.5.5 Other Industry: Education, Government & Public Sector

Beyond finance, insurance, and manufacturing, mobile wallets are increasingly being integrated into public sector services and educational institutions. In the education sector, mobile wallets have been adopted for functions such as digital student IDs, tuition payments, and on-campus purchases. Universities and colleges, particularly during the COVID-19 pandemic, expanded wallet use for contactless payments in cafeterias, libraries, and bookstores. These efforts not only improved hygiene and efficiency but also familiarized students with digital financial tools early in their lives.

Government institutions have also leveraged mobile wallets for public service delivery. Notable examples include the disbursement of government subsidies, such as Malaysia's eBelia and eTunai Rakyat programs, which channelled financial aid directly to

eligible citizens via mobile wallets. These platforms offered a convenient, efficient, and traceable method for fund distribution, reducing administrative burdens and ensuring timely access for beneficiaries. Mobile wallets have also found utility in transportation systems, particularly in urban mobility networks. Integration with services like Touch 'n Go in Malaysia enables users to pay for tolls, parking, and public transit without physical cash, enhancing convenience and promoting cashless ecosystems.

The COVID-19 pandemic played a significant role in accelerating wallet adoption across these sectors. Contactless payments were widely embraced as a hygiene measure, and mobile wallets became key tools for administering vaccination incentives and emergency aid packages. These developments underscore the wallet's potential as a digital infrastructure component beyond private-sector applications. Despite promising use cases, research in these sectors remains scattered. Most studies focus on pilot programs or single-use applications without evaluating long-term adoption patterns, user satisfaction, or comparative effectiveness. There is a need for more comprehensive investigations that assess the scalability and sustainability of wallet integration across these diverse contexts.

The application of mobile wallets extends well beyond retail and banking, touching sectors as diverse as insurance, manufacturing, education, and public administration. While each of these sectors presents unique opportunities and challenges, they collectively underscore the wallet's versatility as a financial and operational tool. Current literature offers preliminary insights, but much of it remains exploratory. More robust, interdisciplinary, and data-driven research is essential to understand sector-specific dynamics, optimize implementation strategies, and maximize the social and economic impact of mobile wallet technologies.

2.6 Overview of Mobile Wallet Technology

Mobile wallet technology represents a significant milestone in the evolution of digital financial services, offering consumers a secure, efficient, and convenient means of managing financial transactions through mobile devices. A mobile wallet, also referred to as a digital wallet or e-wallet, is a virtual platform that allows users to store and manage payment information, conduct peer-to-peer transfers, pay for goods and services online and in-store, and manage loyalty rewards and promotional offers. This financial innovation is considered part of the broader fintech revolution, which aims to enhance financial inclusion and digitize traditional banking systems.

Globally, the adoption of mobile wallets has been on a steep upward trajectory. According to Statista (2024), the global transaction value in the mobile wallet segment is expected to reach over USD 16 trillion by the end of 2024, with Asia-Pacific leading the charge due to strong infrastructure, regulatory support, and consumer demand. Countries like China and India have exhibited rapid uptake of mobile payment services. Platforms like Alipay and WeChat Pay in China dominate the market with over a billion users, while India's Unified Payments Interface (UPI) has processed over 10 billion monthly transactions as of early 2024 (Reserve Bank of India, 2024). These trends reflect an accelerating shift toward cashless societies, driven by growing smartphone penetration, government-led digital initiatives, and increasing user trust in digital transactions.

In Southeast Asia, Malaysia has emerged as a key player in mobile wallet development. The Malaysian government, through Bank Negara Malaysia (BNM), has been proactive in shaping a regulatory environment conducive to fintech innovation. The Financial Sector Blueprint 2022–2026 outlines a clear strategic vision for fostering digital financial inclusion, highlighting mobile wallets as a core pillar (BNM, 2022). As of 2024, mobile wallet penetration in Malaysia has reached 63%, with more than 11 million active

users utilizing platforms such as Touch 'n Go eWallet, Boost, GrabPay, and MAE by Maybank (Adyen Index, 2024; Mastercard, 2025).

These platforms offer a wide range of services beyond basic payments, including bill payments, mobile phone top-ups, QR code scanning, merchant rewards, and integration with e-commerce services. The versatility and user-centric features of these mobile wallets contribute significantly to their growing popularity. Moreover, technological advancements in biometric authentication, blockchain, and artificial intelligence have enhanced the security, transparency, and customization of mobile wallet services.

Despite these advancements, adoption patterns are not uniform across all segments of the population. Studies have shown that factors such as age, income level, education, and digital literacy greatly influence consumer willingness to use mobile wallet services (Oppotus, 2023; Shaikh et al., 2023). While younger and more digitally savvy consumers have adopted mobile wallets at a much faster rate, older adults, rural populations, and individuals with lower digital competence have demonstrated hesitance due to perceived complexity, security concerns, and lack of trust in digital systems.

Security remains a core concern in mobile wallet adoption. Although mobile wallet platforms implement advanced security protocols such as end-to-end encryption, tokenization, and two-factor authentication, incidents of data breaches, phishing attacks, and unauthorized transactions have contributed to consumer wariness. According to a recent survey by the Malaysian Consumer Fintech Association (2023), 40% of non-users cited fear of financial fraud and data privacy issues as primary deterrents. Consequently, fintech providers must continuously adapt and innovate to reinforce user trust and provide transparent information on security practices.

The COVID-19 pandemic played a pivotal role in accelerating mobile wallet usage globally, including in Malaysia. Lockdowns, social distancing protocols, and a general aversion to handling cash encouraged businesses and consumers to switch to contactless payment solutions. E-wallet transactions in Malaysia surged by more than 60% in 2020 and have continued to grow steadily since then (MCMC, 2023). The pandemic also prompted government interventions such as the e-Tunai Rakyat initiative, which distributed digital cash incentives via e-wallets to stimulate spending and promote cashless adoption, particularly among low-income groups. In addition to government involvement, private-sector collaboration has played a critical role in driving mobile wallet expansion. Strategic partnerships between mobile wallet providers and retailers, food delivery platforms, public transportation systems, and online marketplaces have increased the utility and visibility of these platforms. Such integrations create ecosystems where mobile wallets are not merely payment tools but essential lifestyle applications.

Furthermore, mobile wallet adoption has implications for financial inclusion. For individuals without access to traditional banking infrastructure especially in rural and underserved areas mobile wallets can provide essential financial services, enabling participation in the formal economy. However, achieving this goal requires addressing not only technological readiness but also socio-cultural and educational barriers. Efforts to promote financial literacy and digital education are therefore critical to ensuring inclusive adoption. From a business perspective, mobile wallet technology offers opportunities for customer engagement, brand loyalty, and data-driven personalization. Businesses that accept mobile wallet payments can gain insights into consumer preferences and behaviour, enabling more targeted marketing strategies and customer retention initiatives. As the mobile wallet landscape evolves, we can expect increasing use of artificial intelligence to offer real-time promotions, spending analytics, and personalized financial advice.

In conclusion, mobile wallet technology has transformed the way individuals manage, access, and utilize financial resources. With robust growth in both developed and emerging markets, and with Malaysia positioned at the forefront of fintech adoption in Southeast Asia, the mobile wallet ecosystem continues to expand. However, ensuring equitable access and sustainable adoption requires addressing persistent barriers related to trust, security, digital literacy, and demographic inequalities. A deeper understanding of these technological, behavioural, and contextual factors is essential to crafting effective interventions and strategies for inclusive digital financial transformation.

2.7 Theoretical Foundations

2.7.1 Introduction to Theoretical Foundations

A strong theoretical foundation is essential for explaining consumer adoption of mobile wallet services because such behaviour is influenced by technological perceptions, innovation characteristics, and psychological concerns. In the context of digital financial services, users do not decide purely based on technical functionality. Instead, they evaluate whether the technology is useful, easy to use, compatible with their lifestyle, safe, and worth adopting in relation to their personal needs and concerns. This complexity requires an integrated theoretical approach rather than reliance on a single explanatory model.

The present study is grounded in three complementary perspectives: the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk theory. TAM provides the basis for understanding how consumers evaluate the functional value and simplicity of mobile wallet services through perceived usefulness and perceived ease of use (Davis, 1989; Venkatesh et al., 2003). IDT extends this explanation by emphasizing innovation attributes such as compatibility, trialability, and observability,

which influence whether users perceive a technology as suitable for adoption within their daily life and social environment (Rogers, 2003). Perceived risk theory adds the inhibitory dimension of consumer decision-making by explaining how concerns about security, privacy, uncertainty, and possible loss may discourage the use of financial technology (Featherman & Pavlou, 2003; Akbar et al., 2020).

These three perspectives are highly relevant to the study of mobile wallet adoption in Malaysia. The mobile wallet is not only a digital tool but also a financial platform that requires confidence, trust, and routine behavioural adjustment. Consumers may acknowledge its benefits while still hesitating due to security concerns or limited readiness. Likewise, a mobile wallet may be easy to use, but adoption may remain weak if users do not perceive it as compatible with their lifestyle or if they feel uncertain about digital financial risk. Therefore, the integration of TAM, IDT, and perceived risk theory offers a more comprehensive explanation of mobile wallet adoption behaviour than any single theory in isolation. In this study, TAM and IDT are used to explain the antecedents of adoption readiness, while perceived risk theory explains the risk dimension associated with security and privacy concerns. Adoption readiness and perceived risk are then positioned as direct predictors of behavioural intention, while demographic factors are introduced as moderators affecting the strength of selected relationships. This theoretical integration ensures conceptual clarity and alignment across the study.

2.7.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), introduced by Davis (1989), is one of the most influential frameworks for explaining user acceptance of new technologies. TAM was originally developed to explain computer usage behaviour, but it has since been widely applied to various technologies, including internet banking, mobile commerce, e-

learning systems, and digital payment platforms. The model proposes that two key beliefs shape acceptance behaviour: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which a person believes that using a technology will enhance performance, while perceived ease of use refers to the degree to which a person believes that using the technology will be free of effort (Davis, 1989).

TAM has remained highly relevant because of its strong explanatory capacity and adaptability across different technological settings. In the context of mobile wallets, perceived usefulness can be understood as the extent to which the service improves transaction efficiency, convenience, speed, accessibility, and financial management. Perceived ease of use refers to the simplicity of registration, navigation, payment completion, and overall application operation. When users perceive mobile wallet services as both beneficial and easy to use, they are more likely to evaluate them positively and become willing to adopt them (Oliveira et al., 2016; Baabdullah et al., 2019).

A major strength of TAM is that it explains consumer behaviour through cognitive evaluation. Users assess whether a technology helps them and whether it demands excessive effort. These judgments influence their acceptance decisions. In financial technology research, TAM is particularly useful because digital payment services must not only be technically available but also be perceived as functionally valuable and manageable by users. Studies on mobile wallets, mobile banking, and e-payment systems have repeatedly shown that perceived usefulness and perceived ease of use are significant predictors of intention and acceptance (Alalwan et al., 2017; Shaikh et al., 2023).

However, TAM also has limitations. It does not fully capture contextual factors such as innovation characteristics, trust, perceived risk, or demographic differences, which are especially important in digital finance. Users may regard a technology as useful and easy to use but still hesitate because of privacy concerns, incompatibility with habits, or

lack of confidence. This has led many scholars to extend TAM or combine it with other theories when studying complex services such as mobile wallets (Venkatesh et al., 2003; Oliveira et al., 2016). In the present study, TAM provides the conceptual basis for two important antecedents of adoption readiness: perceived usefulness and perceived ease of use. This positioning is appropriate because readiness to adopt a mobile wallet is likely to be strengthened when users believe the service is beneficial and simple to operate.

2.7.3 Innovation Diffusion Theory (IDT)

Innovation Diffusion Theory (IDT), developed by Rogers (2003), explains how innovations spread through a population over time and why some innovations are adopted more quickly than others. The theory argues that adoption is influenced by how potential users perceive the characteristics of the innovation itself. Rogers identified five important attributes of innovation: relative advantage, compatibility, complexity, trialability, and observability. These characteristics shape whether users perceive an innovation as attractive, understandable, and worth adopting.

Among these attributes, compatibility, trialability, and observability are especially relevant to the present study. Compatibility refers to the degree to which an innovation is perceived as consistent with users' values, prior experiences, and existing habits. Trialability refers to the extent to which the innovation can be tested on a limited basis before full adoption. Observability refers to the degree to which the results and benefits of the innovation are visible to others (Rogers, 2003). These three attributes are particularly important in mobile wallet adoption because consumers often assess whether the service fits their daily payment behaviour, whether they can experiment with it safely, and whether they can observe successful use by others.

In digital payment contexts, compatibility may relate to whether the mobile wallet aligns with users' shopping patterns, smartphone usage, and preference for quick and convenient transactions. Trialability may involve the ability to make small transactions, test the app during promotions, or use it without major commitment. Observability may arise when consumers see merchants, friends, relatives, or peers using mobile wallets confidently in everyday settings. These visible and experiential elements can reduce uncertainty and improve acceptance (Patil et al., 2020; Shaikh et al., 2023).

IDT is particularly useful because it captures behavioural and contextual elements that are not fully explained by TAM. A technology may be useful and easy to use yet still face slow adoption if it is not compatible with users' routines or if its benefits are not visible in social settings. In this sense, IDT complements TAM by highlighting how innovation-related perceptions shape the likelihood of adoption in real-world social environments. In the present study, compatibility, trialability, and observability are treated as important determinants of adoption readiness. This reflects the argument that readiness is strengthened not only by cognitive judgments of usefulness and ease of use, but also by the perceived fit, testability, and social visibility of the innovation.

2.7.4 Perceived Risk Theory

Perceived risk theory provides an important lens for understanding consumer hesitation in technology adoption, especially when the technology involves financial transactions, personal data, or uncertainty about system reliability. Featherman and Pavlou (2003) conceptualized perceived risk as the expectation of potential loss or negative consequences arising from the use of digital services. In online and mobile financial contexts, perceived risk often includes concerns related to financial loss, privacy invasion, fraud, technical failure, and overall insecurity of the service.

The theory is especially relevant to mobile wallet adoption because a mobile wallet is not merely a technological application; it is also a financial instrument. Users must trust the system sufficiently to store information, authorize transactions, and depend on digital channels for monetary exchange. Even when users acknowledge the benefits of mobile wallets, they may still avoid adoption if they believe the service exposes them to undue risk. For many consumers, security and privacy concerns are central to this evaluation process (Akbar et al., 2020; Alsharif et al., 2021).

Security concerns typically refer to worries about hacking, unauthorized access, fraud, and transaction failure. Privacy concerns refer to worries about misuse of personal data, surveillance, lack of control over information, and unwanted disclosure of financial details. These concerns are especially influential in digital finance because users may lack direct physical control over the transaction process and must rely on the integrity of the app, service provider, and network environment. Prior research consistently shows that stronger security and privacy concerns lead to higher perceived risk and weaker behavioural intention in digital payment services (Featherman & Pavlou, 2003; Akbar et al., 2020; Shaikh et al., 2023).

Perceived risk theory strengthens the present study by ensuring that the framework includes not only positive drivers of adoption, but also the psychological barriers that may discourage consumers. In this study, security and privacy concerns are positioned as antecedents of perceived risk, while perceived risk is positioned as a direct predictor of behavioural intention. This structure reflects the view that users first evaluate potential threats and uncertainties, and that these evaluations then shape their willingness to adopt mobile wallet services.

2.7.5 Behavioural Intention Framework

Behavioural intention is a central concept in technology adoption research because it captures the degree to which a person is willing or plans to perform a particular behaviour in the future. In information systems literature, behavioural intention is often treated as the most immediate predictor of actual usage behaviour. A person who intends to adopt a technology is more likely to use it, if there are no significant barriers preventing action (Davis, 1989; Venkatesh et al., 2003).

In the context of mobile wallet services, behavioural intention refers to the consumer's willingness to adopt, use, or continue using the service for transactions and related financial activities. Behavioural intention does not emerge in isolation. Instead, it is shaped by a range of evaluations and perceptions, including expected benefits, usability, trust, compatibility, confidence, and risk. Thus, behavioural intention serves as an appropriate dependent variable because it reflects the outcome of the consumer's decision-making process regarding mobile wallet adoption.

The present study adopts a behavioural intention framework in which intention is explained directly by adoption readiness and perceived risk. Adoption readiness reflects a user's preparedness and openness to using mobile wallets, while perceived risk reflects concerns that may discourage such use. This structure allows the study to explain behavioural intention through both enabling and inhibiting forces. It is especially suitable in the Malaysian context, where mobile wallet adoption may depend not only on awareness of the technology but also on consumer confidence and perceived safety. By using behavioural intention as the main dependent variable, this study aligns with established technology adoption research while also allowing the model to remain focused and conceptually coherent.

2.7.6 Relevance of Theories to this Study

The integration of TAM, IDT, perceived risk theory, and behavioural intention logic provides a coherent theoretical basis for this study. Each theory contributes a different but complementary perspective on mobile wallet adoption. TAM explains how consumers assess the usefulness and ease of use of mobile wallet services. IDT explains how users respond to innovation attributes such as compatibility, trialability, and observability. Perceived risk theory explains the negative influence of security and privacy concerns on consumer evaluation. The behavioural intention framework provides the outcome variable that captures the likelihood of mobile wallet adoption. This integration is particularly important because mobile wallet adoption is a multidimensional phenomenon. Consumers may acknowledge that mobile wallets are useful and easy to operate but still hesitate if they do not perceive them as fitting their daily routines or if they fear digital fraud and privacy loss. Similarly, a mobile wallet may be widely promoted, but adoption may remain limited if users are not personally ready or if demographic factors influence how readiness and risk are translated into intention.

The present study therefore uses TAM and IDT as the basis for explaining adoption readiness, perceived risk theory as the basis for explaining perceived risk, and behavioural intention as the final dependent variable. In addition, demographic factors are introduced as moderators of the relationships between adoption readiness and behavioural intention, and between perceived risk and behavioural intention. This theoretical integration ensures that the framework remains aligned with the final simplified model and avoids the conceptual inconsistencies identified by the examiner.

2.8 Mobile Wallet Adoption: Global and Malaysian Perspectives

Mobile wallet adoption has become an increasingly important research topic due to the global expansion of digital payments and the wider transformation of financial services through mobile technology. In many countries, mobile wallets are now used for retail purchases, e-commerce, peer-to-peer transfers, utility payments, transportation, and other daily transactions. This growth has been supported by the increasing penetration of smartphones, internet accessibility, fintech innovation, and the consumer desire for faster and more convenient payment solutions (Oliveira et al., 2016; Omarini, 2022).

At the global level, adoption patterns differ significantly across countries and regions. In some economies, particularly in Asia, mobile wallets have become deeply integrated into daily life due to strong digital ecosystems, high merchant acceptance, and supportive regulation. In other markets, adoption has grown more slowly because of consumer attachment to traditional payment methods, stronger privacy concerns, or limited interoperability across systems. These differences suggest that mobile wallet adoption depends not only on technological advancement, but also on the broader socio-economic, institutional, and behavioural environment (Shaikh et al., 2023).

The Asia-Pacific region has played a particularly important role in advancing mobile wallet adoption. The success of digital payment systems in countries such as China and India has demonstrated that mobile financial technologies can become embedded in consumer routines when innovation, infrastructure, and policy support converge. These developments have encouraged wider scholarly attention to the determinants of mobile payment adoption, especially in emerging economies where digital payment systems may contribute to both convenience and financial inclusion.

Malaysia is a significant case within this broader regional trend. The country has pursued national strategies aimed at digital transformation and greater use of electronic payments, supported by regulatory leadership from Bank Negara Malaysia and the broader

development of the fintech sector (Bank Negara Malaysia, 2022, 2024). Mobile wallet platforms such as Touch 'n Go eWallet, Boost, GrabPay, MAE, and ShopeePay have become increasingly prominent in everyday transactions. Consumers can use these platforms for shopping, transportation, food delivery, bill payments, and online purchases, which has strengthened the visibility and normalization of mobile wallet use in the Malaysian market.

Despite this progress, adoption in Malaysia remains uneven. Market reports and empirical studies suggest that younger, urban, and more digitally literate users are generally more willing to use mobile wallet services, whereas older users and those with weaker digital familiarity are often more hesitant (Oppotus, 2023; Widjaja et al., 2023). This suggests that even in a country with growing digital infrastructure, mobile wallet adoption is not uniform across all segments of society. Consumer concerns about safety, privacy, trust, and personal readiness continue to shape adoption decisions.

These global and Malaysian patterns indicate that mobile wallet adoption is influenced by both common and context-specific factors. While convenience and usability are broadly relevant, local contexts such as digital literacy, security concerns, and demographic differences remain critical. Therefore, studying mobile wallet adoption in Malaysia requires a framework that captures both the enabling and inhibiting factors that shape behavioural intention.

2.9 Adoption Readiness (AR)

Adoption readiness refers to the extent to which an individual is prepared to accept and use a technology. It reflects psychological openness, confidence, perceived capability, and willingness to engage with innovation. In the context of mobile wallet services, adoption readiness is especially important because willingness to adopt a digital payment

platform depends not only on recognizing its benefits, but also on feeling personally prepared to use it effectively and safely.

The idea of readiness is valuable because it captures a stage of acceptance that lies between evaluation and intention. Consumers may be aware of a technology and even view it positively, yet still not feel fully prepared to adopt it. This gap is particularly relevant in financial technology, where user confidence, behavioural adjustment, and perceived fit with everyday life influence actual readiness to engage with the service (Thakur & Srivastava, 2014; Baabdullah et al., 2019). In mobile wallet contexts, readiness may be strengthened by perceptions that the service is useful, simple, relevant to personal needs, easy to experiment with, and visible within social settings. For example, when users believe that a mobile wallet saves time, fits their routines, can be tried without major risk, and is already being used successfully by others, they may become more prepared to adopt it. This suggests that readiness is shaped by both cognitive and contextual influences.

Although adoption readiness has received less attention than behavioural intention in many technology adoption studies, it is highly relevant in the present research because it provides a more nuanced understanding of the preparatory conditions that lead to intention. By focusing on readiness, this study can explain how consumers become inclined toward adoption before intention fully forms. In the present study, adoption readiness is treated as a key endogenous construct influenced by perceived usefulness, perceived ease of use, compatibility, trialability, and observability. This positioning reflects the argument that readiness emerges when consumers perceive the service as beneficial, manageable, personally relevant, and socially visible.

2.10 Perceived Risk (PR)

Perceived risk refers to a consumer's subjective expectation of possible negative outcomes associated with using a particular product or service. In digital financial environments, perceived risk is especially important because transactions involve money, personal data, and dependence on technological systems. Consumers may therefore worry about fraud, security breaches, privacy invasion, financial loss, and transaction failure (Featherman & Pavlou, 2003; Akbar et al., 2020).

In mobile wallet services, perceived risk often arises from uncertainty about whether the platform is secure, whether personal information is protected, and whether transactions can be completed reliably. Users may fear unauthorized access to their accounts, misuse of personal data, phishing attacks, app malfunction, or weak recourse in the event of financial loss. Such concerns can weaken trust and reduce willingness to engage with the service. Prior research has shown that perceived risk is a major inhibitory factor in digital payment adoption. Even when consumers recognize convenience and usefulness, high perceived risk can still discourage intention because financial technologies are evaluated not only by potential benefit, but also by potential harm. This is particularly relevant in contexts where digital scam awareness, cybersecurity threats, and consumer caution are increasingly visible (Alsharif et al., 2021; Shaikh et al., 2023).

In the present study, perceived risk is explained by security and privacy concerns. Security concerns refer to fears about cyberattacks, fraud, unauthorized access, and transaction insecurity. Privacy concerns refer to fears about data collection, exposure of personal information, and lack of control over sensitive financial details. When these concerns are stronger, consumers are expected to perceive mobile wallet services as riskier. Perceived risk is then positioned as a direct determinant of behavioural intention. This

structure allows the study to reflect the inhibitory dimension of adoption behaviour in a clear and theoretically grounded manner.

2.11 Behavioural Intention (BI)

Behavioural intention refers to the degree to which an individual is willing or plans to perform a particular behaviour in the future. In the context of technology adoption, it is commonly used as the most immediate predictor of actual usage. A consumer who expresses strong intention to adopt a technology is more likely to use it, provided there are no major barriers to action (Davis, 1989; Venkatesh et al., 2003).

In mobile wallet research, behavioural intention refers to the consumer's willingness to use a mobile wallet for payments, transfers, purchases, and related financial activities. It captures the outcome of the user's evaluation process after considering both the advantages and the concerns associated with the service. This makes behavioural intention a suitable dependent variable in studies of mobile wallet adoption. Behavioural intention is shaped by both positive and negative influences. Positive factors may include usefulness, ease of use, personal readiness, confidence, and compatibility. Negative factors may include perceived risk, uncertainty, distrust, and security anxiety. Because mobile wallet services operate within both technological and financial domains, intention is especially likely to depend on the balance between readiness and risk.

In the present study, behavioural intention is explained directly by adoption readiness and perceived risk. Adoption readiness is expected to strengthen behavioural intention because prepared and confident users are more willing to adopt the service. Perceived risk is expected to weaken behavioural intention because consumers who perceive the service as risky may avoid using it even if they recognize its advantages. This

approach enables the study to examine behavioural intention through both enabling and inhibiting pathways while keeping the model conceptually focused and aligned with the final simplified framework.

2.12 Moderating Role of Demographic Factors

Demographic factors are widely recognized as important contextual influences in technology adoption research because they shape access, familiarity, confidence, and attitudes toward digital services. Although demographic variables may not always directly determine behaviour, they often influence how other variables operate. In the context of mobile wallet adoption, age, education level, income, and digital literacy may affect how consumers interpret readiness and risk, and how these perceptions translate into behavioural intention (Venkatesh et al., 2003; Widjaja et al., 2023).

Age is one of the most studied demographic variables in digital adoption. Younger users are often more accustomed to mobile applications, app-based transactions, and digital interfaces. As a result, they may be more likely to convert adoption readiness into behavioural intention. Older consumers, by contrast, may require stronger confidence before intention develops, and they may also be more sensitive to perceived risk, especially in digital financial settings.

Education level may influence mobile wallet adoption because consumers with higher education often have greater exposure to information technology and stronger ability to evaluate both opportunities and threats associated with digital finance. Income level may also play a role because it influences access to digital devices, mobile internet, and personal flexibility in experimenting with new financial tools. In addition, digital literacy is especially important in the present study because mobile wallet use requires the

ability to navigate apps, understand security features, evaluate digital information, and manage online transactions effectively.

These demographic factors may change the strength of the relationship between adoption readiness and behavioural intention, and between perceived risk and behavioural intention. For example, a highly digitally literate user may translate readiness into intention more easily than a user with weak digital skills. Similarly, the negative effect of perceived risk on intention may be stronger among those who are older, less digitally confident, or more uncertain about mobile financial systems. For this reason, demographic factors are treated in this study as moderators rather than as direct predictors. This allows the model to capture how the impact of adoption readiness and perceived risk varies across consumer groups in the Malaysian context.

2.13 Research Gaps and Justification

Although the literature on mobile wallet adoption is now extensive, several important gaps remain. First, many studies continue to focus primarily on conventional technology acceptance variables such as perceived usefulness and perceived ease of use. While these factors are important, they do not fully explain the extent to which consumers feel psychologically and behaviourally prepared to adopt mobile wallet services. Adoption readiness has received less direct attention, despite its relevance in explaining the transition from evaluation to intention (Thakur & Srivastava, 2014; Baabdullah et al., 2019).

Second, perceived risk is often examined as a separate issue rather than in combination with readiness-related constructs. This creates an imbalance in the literature because mobile wallet adoption is influenced by both positive and negative forces. Consumers do not simply respond to convenience and usefulness; they also respond to concerns about security, privacy, and possible financial loss. Therefore, a more integrated

framework is required to explain adoption behaviour realistically in financial technology contexts.

Third, there is still limited work in Malaysia that jointly examines TAM-related drivers, IDT-related innovation attributes, security and privacy concerns, adoption readiness, perceived risk, and demographic moderation within a single coherent model. Existing studies often emphasize only intention or focus on general technology adoption without giving sufficient attention to the preparatory role of readiness or the contextual role of demographics. Fourth, demographic moderation remains underexplored. While scholars acknowledge that age, education, income, and digital literacy matter, fewer studies test whether these variables alter the strength of key behavioural relationships in mobile wallet adoption. In a context such as Malaysia, where digital finance adoption varies across population groups, this issue is particularly important.

Accordingly, this study is justified because it develops an integrated and simplified framework that explains how perceived usefulness, perceived ease of use, compatibility, trialability, and observability influence adoption readiness; how security and privacy concerns influence perceived risk; how adoption readiness and perceived risk influence behavioural intention; and how demographic factors moderate selected relationships. This structure addresses the theoretical and contextual gaps identified in the literature and provides a clearer explanation of mobile wallet adoption in Malaysia.

2.14 Research Gap

Based on the literature reviewed, the specific research gap of this study can be summarized in four points. First, prior studies on mobile wallet adoption have often emphasized functional technology beliefs but have given less attention to adoption readiness as a distinct explanatory construct. This leaves insufficient understanding of the

extent to which users feel prepared to adopt mobile wallet services beyond merely perceiving them as useful or easy to use. Second, the literature has not sufficiently integrated positive drivers and negative barriers in the same framework. Technology-related and innovation-related attributes are often studied separately from perceived risk, even though both are likely to shape behavioural intention simultaneously in financial technology environments.

Third, research in Malaysia remains limited in terms of combining TAM, IDT, perceived risk, and demographic moderation into a single empirically tested model. This creates a contextual gap because Malaysian consumers may face patterns of digital confidence, security concern, and demographic variation that differ from those in other countries. Fourth, demographic factors are often treated only as background variables rather than as moderators that may alter the strength of the readiness–intention and risk–intention relationships. This leaves an incomplete understanding of why mobile wallet adoption differs across segments of the Malaysian population. This study addresses these gaps by proposing a simplified but integrated model focused on direct effects and moderation only, thereby improving conceptual clarity and empirical coherence in the examination of mobile wallet adoption.

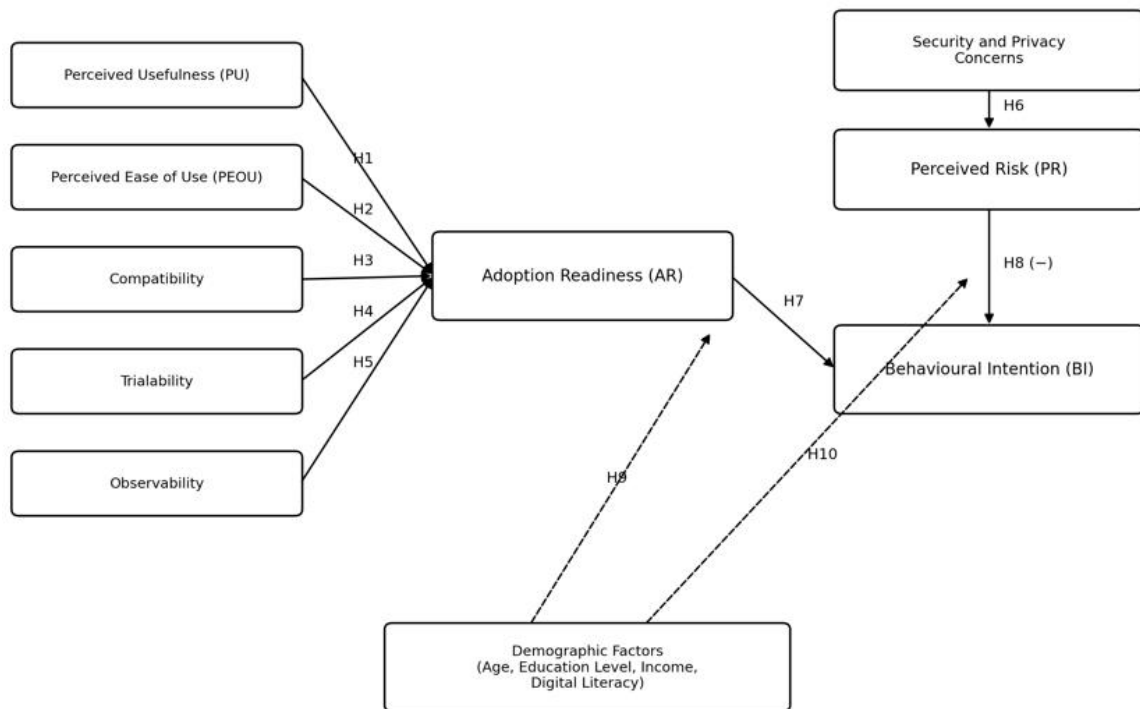
2.15 Conceptual Framework

The conceptual framework of this study is developed through the integration of the Technology Acceptance Model, Innovation Diffusion Theory, and perceived risk theory. The framework proposes that perceived usefulness and perceived ease of use, derived from TAM, together with compatibility, trialability, and observability, derived from IDT, function as antecedents of adoption readiness toward mobile wallet services. These variables represent the positive technological and innovation-related factors that shape user

preparedness. The framework further proposes that security and privacy concerns influence perceived risk. This reflects the argument that concerns about fraud, data protection, unauthorized access, and digital vulnerability contribute directly to the degree of risk consumers associate with mobile wallet use.

Adoption readiness and perceived risk are then positioned as direct predictors of behavioural intention. Adoption readiness is expected to positively influence behavioural intention because prepared and confident users are more likely to adopt the service. Perceived risk is expected to negatively influence behavioural intention because users who associate the service with greater uncertainty and possible loss are less likely to adopt it. Finally, demographic factors are incorporated as moderators. Specifically, the study proposes that demographic variables may alter the strength of the relationship between adoption readiness and behavioural intention, and the relationship between perceived risk and behavioural intention. This reflects the view that consumers from different demographic groups may respond differently to readiness and risk when deciding whether to adopt mobile wallet services. The conceptual framework Figure 2.15 is intentionally structured around direct effects and moderating effects only to maintain conceptual consistency across all chapters and align with the recommended model simplification.

**Figure 2- 1:
Conceptual Framework**



2.16 Hypothesis Development

Based on the conceptual framework and literature reviewed, the following hypotheses are proposed:

H1: Perceived usefulness has a positive influence on adoption readiness toward mobile wallet services.

H2: Perceived ease of use has a positive influence on adoption readiness toward mobile wallet services.

H3: Compatibility has a positive influence on adoption readiness toward mobile wallet services.

H4: Trialability has a positive influence on adoption readiness toward mobile wallet services.

H5: Observability has a positive influence on adoption readiness toward mobile wallet services.

H6: Security and privacy concerns have a positive influence on perceived risk toward mobile wallet services.

H7: Adoption readiness has a positive influence on behavioural intention to use mobile wallet services.

H8: Perceived risk has a negative influence on behavioural intention to use mobile wallet services.

H9: Demographic factors moderate the relationship between adoption readiness and behavioural intention.

H10: Demographic factors moderate the relationship between perceived risk and behavioural intention.

2.16.1 Perceived Usefulness and Adoption Readiness

Perceived usefulness refers to the extent to which a consumer believes that using a mobile wallet enhances transaction performance and overall financial convenience. In TAM, perceived usefulness is regarded as one of the most important determinants of technology acceptance because users are more likely to adopt a system that improves efficiency, convenience, and effectiveness (Davis, 1989). In mobile wallet contexts, usefulness may be reflected in faster payments, easier access to services, smoother transactions, and better control over everyday spending. Prior studies have shown that usefulness is a significant factor in digital payment adoption because consumers value technologies that save time and simplify financial activity (Oliveira et al., 2016; Baabdullah et al., 2019). When users recognize that a mobile wallet offers clear benefits in daily life, they are more likely to become prepared and willing to adopt it. In this study, perceived usefulness is therefore expected to strengthen adoption readiness.

H1: Perceived usefulness has a positive influence on adoption readiness toward mobile wallet services.

2.16.2 Perceived Ease of Use and Adoption Readiness

Perceived ease of use refers to the extent to which a consumer believes that using a mobile wallet is simple, understandable, and free from excessive effort. TAM suggests that technologies perceived as easy to use are more likely to be accepted because they reduce learning burden and usage anxiety (Davis, 1989; Venkatesh et al., 2003). In mobile wallet applications, ease of use may involve intuitive app design, straightforward registration, understandable menus, and uncomplicated payment procedures. Consumers who perceive a mobile wallet as easy to use are more likely to feel comfortable and confident, which in turn can strengthen their readiness to adopt it. Therefore, perceived ease of use is expected to positively influence adoption readiness.

H2: Perceived ease of use has a positive influence on adoption readiness toward mobile wallet services.

2.16.3 Compatibility and Adoption Readiness

Compatibility refers to the extent to which a mobile wallet is perceived as consistent with a user's values, routines, and prior experiences. Rogers (2003) argued that innovations that fit well with existing practices are more likely to be adopted because they require less behavioural disruption. In mobile wallet adoption, compatibility may be reflected in how well the service aligns with users' shopping patterns, reliance on smartphones, preference for convenience, and broader lifestyle habits. When users believe that a mobile wallet fits naturally into their daily life, they are more likely to feel prepared to adopt it. Hence, compatibility is expected to positively influence adoption readiness.

H3: Compatibility has a positive influence on adoption readiness toward mobile wallet services.

2.16.4 Trialability and Adoption Readiness

Trialability refers to the extent to which a technology can be experimented with before full adoption. Rogers (2003) emphasized that trialability reduces uncertainty by allowing users to assess the benefits and usability of innovation through direct experience. In mobile wallet services, trialability may include first-time promotional use, low-risk experimentation, or introductory transactions. When consumers can test a mobile wallet without strong commitment or high perceived loss, they may develop familiarity and confidence, which can strengthen readiness. Previous studies have also shown that the ability to try digital services supports acceptance by reducing hesitation and uncertainty (Patil et al., 2020). Therefore, trialability is expected to positively influence adoption readiness.

H4: Trialability has a positive influence on adoption readiness toward mobile wallet services.

2.16.5 Observability and Adoption Readiness

Observability refers to the extent to which the use and benefits of innovation are visible to others. When consumers observe other people using mobile wallets successfully, they may perceive the service as more credible, useful, and socially accepted (Rogers, 2003).

In the mobile wallet context, observability can occur when users witness digital payments being used in shops, restaurants, transport systems, or among peers and family members.

Such visibility can reduce uncertainty and increase confidence in the service. Accordingly, observability is expected to positively influence adoption readiness.

H5: Observability has a positive influence on adoption readiness toward mobile wallet services.

2.16.6 Security and Privacy Concerns and Perceived Risk

Security and privacy concerns represent major areas of uncertainty in digital financial services. Security concerns relate to fear of fraud, hacking, unauthorized access, or transaction failure, while privacy concerns relate to fear of data misuse, unwanted disclosure, and loss of control over personal information. These concerns are strongly associated with risk perception in online financial environments (Featherman & Pavlou, 2003; Akbar et al., 2020). In mobile wallet use, consumers who worry about security and privacy are more likely to perceive the service as risky. This perceived risk may weaken trust and discourage adoption. Therefore, security and privacy concerns are expected to positively influence perceived risk.

H6: Security and privacy concerns have a positive influence on perceived risk toward mobile wallet services.

2.16.7 Adoption Readiness and Behavioural Intention

Adoption readiness reflects the degree to which users are mentally, behaviourally, and practically prepared to use mobile wallet services. Consumers who are confident, open to innovation, and comfortable with digital transactions are more likely to form stronger intention to adopt the service. This reflects the idea that readiness functions as a preparatory condition for intention formation (Thakur & Srivastava, 2014). In this study,

adoption readiness is therefore expected to positively influence behavioural intention toward mobile wallet use.

H7: Adoption readiness has a positive influence on behavioural intention to use mobile wallet services.

2.16.8 Perceived Risk and Behavioural Intention

Perceived risk reflects concern over possible negative outcomes associated with using a mobile wallet, including fraud, privacy invasion, financial loss, and technological uncertainty. When consumers perceive mobile wallet use as risky, they are less likely to intend to adopt it. Prior studies in digital payment adoption consistently show that risk weakens intention because financial technology involves not only convenience, but also trust and vulnerability (Akbar et al., 2020; Shaikh et al., 2023). Accordingly, perceived risk is expected to negatively influence behavioural intention toward mobile wallet use.

H8: Perceived risk has a negative influence on behavioural intention to use mobile wallet services.

2.17 Summary of the Chapter

This chapter reviewed the key theoretical and empirical literature relevant to the present study. Beginning from the theoretical foundations, the chapter explained the role of the Technology Acceptance Model, Innovation Diffusion Theory, perceived risk theory, and behavioural intention logic in understanding mobile wallet adoption. It then reviewed the constructs of adoption readiness, perceived risk, behavioural intention, and the moderating role of demographic factors, together with the broader global and Malaysian mobile wallet context. The chapter identified important research gaps, particularly the limited integration of TAM, IDT, risk perceptions, adoption readiness, and demographic

moderation in the Malaysian context. Based on these gaps, a coherent conceptual framework was developed, and the study hypotheses were formulated. The chapter therefore provides the theoretical and conceptual basis for the empirical investigation presented in the next chapter.

CHAPTER 3:

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology employed to examine the determinants of adoption readiness, perceived risk, and behavioural intention toward mobile wallet adoption in Malaysia. The purpose of this chapter is to explain the systematic procedures used to collect, measure, and analyse quantitative data to test the conceptual framework and research hypotheses developed in Chapter Two. A sound methodology is essential in ensuring that the study is conducted in a rigorous, transparent, and scientifically defensible manner. The chapter begins by outlining the research setting and the philosophical assumptions guiding the study. It then explains the research design, population and sampling procedures, and the data collection methods adopted to obtain responses from Malaysian mobile wallet users. The chapter also describes the questionnaire design and the measurement instruments used to capture the key constructs of the study, namely perceived usefulness, perceived ease of use, compatibility, trialability, observability, adoption readiness, perceived risk, behavioural intention, and demographic factors.

In addition, the chapter presents the procedures used for pre-testing the questionnaire and conducting preliminary data assessment. These steps were necessary to ensure that the instrument was appropriate for the target population and that the collected data were suitable for subsequent statistical analysis. The chapter further describes the analytical techniques employed in this study, including exploratory factor analysis (EFA),

reliability testing, descriptive analysis, multiple regression analysis, and moderation analysis. These techniques were selected to assess the validity of the measurement model and to test the direct and moderating relationships specified in the conceptual framework. Finally, the chapter discusses the ethical considerations observed throughout the research process. Overall, the methodology presented in this chapter provides the empirical foundation for examining the determinants of mobile wallet adoption in Malaysia in a manner that is consistent with the research objectives and hypotheses of the study.

3.2 Research Setting

This study was conducted in Malaysia, which provides an appropriate and relevant setting for examining mobile wallet adoption. Malaysia has experienced rapid growth in digital financial services over the past decade, supported by increased smartphone penetration, wider internet access, strong fintech development, and policy initiatives promoting electronic payments and a cashless economy. The Malaysian payment landscape has been transformed by the growing use of mobile wallets such as Touch 'n Go eWallet, GrabPay, Boost, MAE, and ShopeePay, all of which have become increasingly visible in everyday consumer transactions. Malaysia is an especially suitable setting for this study because the adoption of mobile wallet services is growing yet still varies significantly across different segments of the population. While many users have embraced digital payment systems because of convenience and speed, others remain hesitant due to concerns about security, privacy, and confidence in digital transactions. Such differences make Malaysia a meaningful context for examining how technological attributes, innovation-related factors, perceived risk, and demographic characteristics influence consumer intention toward mobile wallet adoption.

The target population of this study consists of adult consumers in Malaysia who have experience using or are familiar with mobile wallet services for financial transactions. This population includes individuals from different demographic backgrounds, such as varying age groups, education levels, income levels, and levels of digital literacy. The diversity of the Malaysian consumer environment supports the examination of demographic moderation, which is one of the important concerns addressed in this study. Thus, the Malaysian setting is particularly relevant because it reflects both the opportunities and challenges associated with mobile wallet adoption in an emerging digital finance environment. It allows the study to generate findings that are contextually grounded in Malaysia's rapidly evolving payment ecosystem while also contributing to broader discussions on fintech adoption in emerging markets.

3.3 Research Paradigm

A research paradigm refers to the set of philosophical assumptions that guide the conduct of a study, including beliefs about the nature of reality, the nature of knowledge, and the methods considered appropriate for investigating a phenomenon. The paradigm adopted by a researcher shapes the formulation of research questions, the selection of research methods, the design of the study, and the interpretation of findings. For this reason, identifying an appropriate research paradigm is important in ensuring consistency throughout the research process. This study adopts the positivist research paradigm. Positivism assumes that social phenomena can be objectively observed, measured, and analysed through empirical methods. Under this paradigm, knowledge is generated through systematic observation, measurement, and hypothesis testing, with the aim of producing findings that are logical, replicable, and generalisable. Positivism is particularly

appropriate for studies that seek to examine relationships between measurable variables using statistical techniques.

The adoption of a positivist paradigm is suitable for the present study because the research seeks to test hypothesised relationships among clearly defined constructs, including perceived usefulness, perceived ease of use, compatibility, trialability, observability, adoption readiness, perceived risk, behavioural intention, and demographic factors. These constructs are operationalised through structured questionnaire items and analysed quantitatively using statistical methods. The study therefore aligns with the positivist emphasis on objectivity, measurement, and theory testing. In addition to the positivist philosophical stance, this study employs a deductive research approach. Deduction begins with established theories and prior empirical findings, from which hypotheses are derived and subsequently tested using observed data.

In this study, the hypotheses were developed based on the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk theory. These theories provided the conceptual basis for formulating the relationships proposed in the research model. The empirical testing of the hypotheses then allows the researcher to determine whether the theoretical expectations are supported in the Malaysian mobile wallet context. The combination of a positivist paradigm and deductive approach is therefore appropriate because the present study aims to test a clearly specified conceptual framework in a systematic and objective manner. This methodological alignment supports the academic rigour of the research and ensures that the empirical investigation remains consistent with the theoretical foundations established in Chapter Two.

3.4 Research Design

Consistent with the positivist paradigm and deductive orientation of the study, a quantitative research design was adopted. Quantitative research is appropriate when the purpose of the study is to measure variables, examine relationships among constructs, and test hypotheses using statistical analysis. In studies of technology adoption, a quantitative design is particularly useful because it allows the researcher to collect standardised data from a relatively large number of respondents and assess patterns of association among theoretical variables in a structured manner. The present study employs a cross-sectional survey design. A cross-sectional design involves collecting data from respondents at a single point in time. This design is suitable for the study because the objective is to examine current perceptions and behavioural tendencies relating to mobile wallet adoption rather than changes over time. The cross-sectional approach also supports efficient data collection from a diverse pool of respondents across Malaysia and is widely used in research on consumer behaviour, information systems, and financial technology adoption.

A structured questionnaire was used as the main instrument for data collection. The questionnaire contained items designed to measure the key constructs of the study, including perceived usefulness, perceived ease of use, compatibility, trialability, observability, adoption readiness, perceived risk, behavioural intention, and demographic variables. Because the conceptual framework consists of direct relationships and moderating effects, the quantitative survey design was well suited to testing the proposed hypotheses. The choice of a quantitative cross-sectional survey design is justified on several grounds. First, it enables the collection of data from a large sample in a cost-effective and time-efficient manner. Second, it allows the use of statistical techniques such as exploratory factor analysis, reliability analysis, multiple regression, and moderation analysis. Third, it supports the testing of theory-driven hypotheses derived from established literature. Although a cross-sectional design does not establish causality in the

same way as longitudinal or experimental research, it remains appropriate for examining associations among perceptions and behavioural intention in the context of mobile wallet adoption. Overall, the research design adopted in this study is appropriate for addressing the research objectives and testing the conceptual framework in a systematic and empirically grounded way.

3.5 Population and Sampling

The population of a study refers to the full group of individuals who possess characteristics relevant to the research objectives. In the present study, the target population consists of adult consumers in Malaysia who have experience using, or at minimum are familiar with, mobile wallet services for financial transactions. This population is relevant because the study seeks to understand how consumers evaluate mobile wallet services in terms of readiness, risk, and intention, rather than to examine the views of firms, service providers, or technical specialists. Malaysia provides a broad and diverse pool of mobile wallet users. Users differ in terms of age, education level, income, occupation, and digital literacy, and these differences are important to the objectives of the study because demographic factors are examined as moderators. Including respondents from varied demographic backgrounds therefore strengthens the ability of the study to investigate whether adoption readiness and perceived risk influence behavioural intention differently across user groups.

Given the wide geographical distribution of users and the practical difficulty of obtaining a complete national sampling frame of mobile wallet users, this study adopted a non-probability sampling method, specifically convenience sampling. Convenience sampling involves collecting data from respondents who are accessible and willing to participate. This method is widely used in behavioural and technology adoption research,

particularly when the aim is to test relationships among constructs rather than estimate exact population parameters. Respondents were approached through both online and offline channels. The online method enabled the researcher to reach a broad group of users across different regions through digital networks, whereas the offline method supported participation from respondents who may have been less reachable through online channels alone. Participation was voluntary, and a screening question was included at the beginning of the survey to ensure that only respondents who met the inclusion criteria were allowed to proceed.

Although convenience sampling limits the extent to which the findings can be generalized to the entire population of Malaysian consumers, it remains appropriate for the present study because the research seeks to test a theoretical model rather than produce a nationally representative prevalence estimate. In addition, the diversity of respondents captured through the sampling process helps support meaningful analysis of direct effects and demographic moderation.

3.5.1 Sample Size Determination

Determining an appropriate sample size is essential in quantitative research because it affects statistical power, measurement stability, reliability, and the generalisability of findings. In the present study, sample size was determined using two complementary approaches: established guidelines for multivariate analysis and formal statistical power analysis. First, this study considered commonly accepted guidelines for factor analysis and regression-based research. According to Hair et al. (2019), a general rule of thumb for exploratory factor analysis is to obtain at least five respondents for each measurement item. The final instrument used in this study consisted of approximately 38 items, which yields a minimum recommended sample size of 190 respondents. However, because the study

aimed to perform not only EFA but also multiple regression and moderation analysis, a substantially larger sample was considered desirable to improve the robustness and stability of the findings.

Second, the adequacy of the sample size was verified using G*Power 3.1 (Faul et al., 2009). The power analysis was based on the following parameters: linear multiple regression (fixed model, R^2 deviation from zero), medium effect size ($f^2 = 0.15$), significance level ($\alpha = 0.05$), statistical power ($1 - \beta = 0.80$), and eight predictors. Based on these parameters, the minimum recommended sample size was 160 respondents. While this indicated that the study could be adequately powered with a smaller sample, a larger target was adopted to improve precision and strengthen the reliability of multivariate analyses. As an additional verification step, the Raosoft sample size calculator was used with a 5% margin of error, 95% confidence level, 50% response distribution, and an estimated adult population of 32 million in Malaysia. This calculation produced a minimum recommended sample size of 385 respondents. Based on these considerations, the study targeted 488 respondents, which exceeds the minimum thresholds suggested by both EFA guidelines and power analysis.

The larger target sample improves the stability of factor extraction, strengthens the reliability of regression estimates, and provides a more suitable basis for moderation analysis. It also helps reduce the impact of incomplete responses and screening-related exclusions. A screening item was included at the beginning of the questionnaire to confirm that respondents were at least 18 years old and were familiar with mobile wallet services. Only those meeting the inclusion criteria were retained in the study. Overall, the adopted sample size was appropriate for the objectives of the study and provided sufficient statistical support for the planned analyses.

3.6 Data Collection Method

This study employed a structured, self-administered questionnaire as the primary instrument for collecting quantitative data. The questionnaire-based approach is appropriate because the constructs in the conceptual framework, such as readiness, perceived risk, and behavioural intention, are subjective perceptions that can be effectively measured through standardised survey items. A structured questionnaire also ensures consistency across respondents and facilitates statistical analysis. To enhance the inclusiveness and reach of the study, the data collection strategy combined online and offline methods. This mixed-mode approach was useful because mobile wallet users in Malaysia vary in digital exposure, accessibility, and willingness to respond through different channels. Using both modes therefore helped broaden participation and reduce overreliance on a single distribution method.

3.6.1 Online Data Collection

The online survey was distributed through digital communication channels such as social media platforms, messaging applications, and online networks. Online data collection offered several advantages, including broad geographic reach, low administrative cost, and speed of distribution. It also provided convenience to respondents, who could complete the questionnaire at their preferred time using their smartphones or other digital devices. Because the topic of the study concerns mobile wallet usage, online data collection was particularly relevant, as many respondents were already active users of digital platforms. However, care was taken to include screening questions and clear instructions so that only eligible participants contributed responses to the study.

3.6.2 Offline Data Collection

Offline data collection was used to complement the online approach and to include respondents who might have been less likely to participate through digital channels alone. In the offline mode, printed questionnaires were distributed directly to potential respondents in accessible public or institutional settings. This method helped improve inclusivity by allowing participation from users with varying levels of online engagement. The use of offline distribution also reduced the risk of excessive concentration in a digitally overrepresented group. In this way, combining online and offline methods supported broader demographic variation within the final sample.

3.6.3 Data Collection Period and Integrity Measures

Data were collected over a defined period sufficient to obtain the targeted number of responses. To ensure the quality and integrity of the dataset, several precautionary steps were taken during collection. First, respondents were screened for eligibility at the beginning of the questionnaire. Second, the questionnaire was structured clearly to reduce confusion and incomplete answers. Third, responses were reviewed during the data preparation stage to identify duplicate submissions, missing data, and other irregularities. Participation in the study was entirely voluntary. No coercion or incentive-based pressure was applied. Respondents were informed that their participation was for academic purposes only and that their responses would remain anonymous and confidential. These measures supported the quality, credibility, and ethical integrity of the data collection process.

3.7 Questionnaire Design

The questionnaire used in this study was designed to capture the main constructs of the conceptual framework in a clear, structured, and respondent-friendly manner. It was developed based on prior literature and validated measurement scales, with wording adapted to the context of mobile wallet adoption in Malaysia. Refer to Appendix 1, the questionnaire was divided into three sections. Section A collected demographic information. This section included items relating to gender, age group, occupation, education level, and income level. These variables were included not only to describe the profile of the respondents but also to support the analysis of demographic moderation.

Section B measured the technological and innovation-related variables associated with adoption readiness. In the earlier version of the instrument, this section included social influence, but under the final simplified model the questionnaire structure should be aligned to the retained constructs only. Accordingly, this section should be presented in the thesis as measuring perceived usefulness, perceived ease of use, compatibility, trialability, observability, and adoption readiness. These items were measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The Likert scale is appropriate because it enables respondents to indicate the intensity of their agreement with each statement in a manner that is easy to understand and statistically analysable.

Section C measured perceived risk and behavioural intention. In the instrument development stage, perceived risk was conceptually represented through security and privacy concerns, which together informed the risk dimension. All items in this section were also measured using the same five-point Likert scale. The use of a common response format across sections supports response consistency and simplifies analysis.

The sequencing of the questionnaire was designed to improve respondent comfort and reduce response fatigue. Demographic questions were placed first because they are relatively straightforward, followed by attitudinal and behavioural items that require more

reflection. This order was intended to ease respondents gradually into the more cognitively demanding parts of the survey. Overall, the questionnaire design aimed to balance theoretical rigor with practical clarity, ensuring that the instrument was suitable for the target population and capable of producing valid and reliable quantitative data.

3.8 Measurement Instruments

All constructs in the research model were measured using multi-item reflective scales adapted from established studies in technology adoption, innovation diffusion, and digital risk literature. Adapting validated scales helps improve content validity and ensures that the constructs are measured in a manner consistent with prior research, while contextual wording adjustments help make the instrument more suitable for Malaysian mobile wallet users. Perceived usefulness (PU) and perceived ease of use (PEOU) were measured using items adapted from Davis (1989), whose scales remain among the most widely used in TAM-based studies. These items capture the extent to which users perceive the mobile wallet as useful for transaction-related activities and easy to learn and operate.

Compatibility, trialability, and observability were adapted from Rogers (2003) and supported conceptually by innovation diffusion studies such as Moore and Benbasat (1991). These measures were chosen because they reflect whether mobile wallet services fit consumers' routines, can be tested prior to habitual use, and are visible in social contexts. Adoption readiness (AR) was measured using items developed on the basis of literature relating to digital readiness, technological preparedness, and user self-efficacy. These items were framed to capture respondents' confidence, preparedness, and willingness to engage with mobile wallet services.

Perceived risk (PR) was measured using items conceptually grounded in the risk frameworks of Featherman and Pavlou (2003) and Malhotra et al. (2004). Under the final simplified model, the measurement should be presented in an integrated way as reflecting the consumer's overall perception of security- and privacy-related risk associated with mobile wallet services. Behavioural intention (BI) was measured using items adapted from Venkatesh et al. (2003) and related technology adoption studies. These items assessed respondents' willingness to use, continue using, or recommend mobile wallet services.

All items were measured using a five-point Likert scale. This format was selected because it is straightforward for respondents, widely used in consumer behaviour research, and appropriate for subsequent factor and regression analyses. The use of multi-item reflective measures helps increase internal consistency and enables the evaluation of construct reliability and validity during statistical analysis. One important methodological correction is necessary for consistency with the final model: earlier drafts of the instrument description included social influence, perceived security risk, and perceived privacy risk as separate measured constructs. In the revised final thesis, these descriptions should be reframed so that the measurement section reflects only the constructs retained in the final simplified model. This is necessary to maintain alignment with the conceptual framework and hypothesis structure.

3.9 Pre-Testing of the Questionnaire

Before the full-scale data collection was conducted, the questionnaire underwent a comprehensive pre-testing process to ensure clarity, relevance, and validity. Pre-testing is important because it helps identify ambiguous wording, structural weaknesses, and contextual issues that may affect respondent understanding or data quality. The first stage involved expert evaluation. Three academic experts reviewed the questionnaire, including

two with expertise in digital consumer behaviour and one with expertise in research methodology. Their feedback focused on item clarity, logical flow, theoretical relevance, and contextual appropriateness for Malaysian respondents. Based on their comments, several items were revised to improve wording and clarity.

The second stage involved cognitive interviewing with ten respondents drawn from the intended target population. A think-aloud approach was used in which participants were asked to verbalize their thoughts while answering the items. This process helped identify statements that were confusing, overly technical, or open to multiple interpretations. Revisions were subsequently made, particularly to items associated with compatibility and privacy-related concerns. The final stage consisted of a pilot study with 35 participants. The purpose of the pilot study was to assess the internal consistency of the scales and to evaluate the overall practicality of the instrument. Feedback from the pilot participants was used to refine wording, improve sequencing, and eliminate ambiguity. The pilot phase also provided preliminary evidence that the questionnaire was understandable, culturally appropriate, and suitable for the full data collection process. Through this multi-stage pre-testing process, the instrument was strengthened in terms of clarity, face validity, and contextual fit. This improved the likelihood that respondents in the main study would interpret the items consistently and respond meaningfully.

3.10 Preliminary Data Assessment

Prior to conducting the main inferential analyses, a preliminary data assessment was planned and implemented to ensure that the collected responses were of sufficient quality for statistical analysis. Preliminary data assessment is essential in quantitative research because it helps detect issues that may undermine the validity of results, such as excessive missing data, outliers, distributional anomalies, or violations of assumptions. The first step

involved checking the completeness of the returned questionnaires and identifying missing responses. Cases with excessive missing information were removed, while minor omissions were assessed and treated in accordance with standard quantitative data handling practices. This process helped preserve data quality while minimizing unnecessary loss of usable responses.

The second step involved reviewing the dataset for potential response irregularities, including duplicate responses, straight-lining, and logically inconsistent answers. The purpose of this step was to ensure that the final dataset reflected genuine and relevant responses from eligible participants. The third step involved preparing the data for multivariate analysis by examining outliers, normality, and multicollinearity. Outlier detection is important because extreme responses can distort statistical estimates. Normality assessment provides insight into whether the data distribution is acceptable for the analytical methods used, while multicollinearity diagnostics help ensure that the predictor variables are not excessively correlated with one another. The final cleaned and screened dataset was then deemed suitable for reliability testing, exploratory factor analysis, regression analysis, and moderation analysis. By conducting these preliminary checks, the study improved the quality and robustness of the subsequent analyses reported in Chapter Four.

3.11 Data Analysis Techniques

The data collected in this study were analysed using SPSS through a sequence of descriptive and inferential statistical procedures. The choice of analytical techniques was guided by the research objectives, the nature of the data, and the structure of the final conceptual framework. First, descriptive statistics were used to summarise the demographic characteristics of the respondents and to provide an overall profile of the

sample. This step was important for understanding the composition of the dataset in terms of gender, age, education, occupation, and income.

Second, reliability analysis was conducted to assess the internal consistency of the measurement scales. Cronbach's alpha was used as the principal indicator of reliability in determining whether the items within each construct measured the same underlying concept consistently. Third, exploratory factor analysis (EFA) was performed to examine the dimensionality and construct validity of the measurement model. EFA was appropriate because the study involved multiple constructs measured through several questionnaire items, and the analysis helped to verify whether the items loaded meaningfully on their intended factors. Measures such as the Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's Test of Sphericity were used to assess the suitability of the data for factor analysis.

Fourth, multiple regression analysis was used to test the direct hypotheses of the study. Specifically, regression analysis was employed to examine the influence of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on adoption readiness; the influence of security and privacy concerns on perceived risk; and the influence of adoption readiness and perceived risk on behavioural intention. Fifth, moderation analysis was conducted to examine whether demographic factors altered the strength of the relationship between adoption readiness and behavioural intention, and between perceived risk and behavioural intention. This procedure was consistent with the final conceptual framework of the study, which retained direct effects and moderating effects only. Overall, these analytical techniques were appropriate for addressing the research questions and for testing the conceptual framework in a rigorous and methodologically coherent manner.

3.12 Ethical Considerations

This study was conducted in full compliance with the ethical standards established by Universiti Malaysia Sarawak (UNIMAS) for research involving human participants. Ethical considerations were embedded throughout the research process—from the development of the research instrument to data collection, analysis, and reporting—to ensure that participants' rights, dignity, and welfare were always protected. Participation in this research was entirely voluntary, and all participants were provided with clear and sufficient information regarding the purpose, scope, and confidentiality of the study before completing the questionnaire. An informed consent statement was included at the beginning of the survey, both in the online and offline formats. This section explicitly explained that respondents could choose to participate or withdraw at any point without facing any penalties or consequences.

The study ensured anonymity and confidentiality of all respondent data. No personally identifiable information was collected, and responses were stored securely and used solely for academic purposes. The data were aggregated for analysis, and individual responses were never linked to specific individuals. Access to the data was restricted to the researcher and the supervisory team, and all data were processed using password-protected digital files in accordance with data protection guidelines. In designing the questionnaire, care was taken to ensure that the items did not include any sensitive, offensive, or emotionally distressing content. All questions were framed in a neutral and respectful manner, and participants were not coerced or influenced in any way to respond in a particular direction. Respondents were assured that their answers would remain confidential and would not be used for commercial or marketing purposes. Additionally, a pilot test was conducted to ensure that the questionnaire was understandable, free from ambiguity, and culturally appropriate. Feedback obtained from the pilot participants was used to refine the wording of the questions to minimize any potential discomfort or

misunderstanding during the actual data collection phase.

No form of deception was employed in this study. The true purpose of the research was clearly stated in the introductory section of the questionnaire, and participants were given the researcher's contact information should they have any concerns or wish to request further information. The study was also conducted in alignment with the principles outlined in the Declaration of Helsinki and adhered to ethical norms commonly practiced in social and behavioural research. In conclusion, all reasonable steps were taken to uphold high ethical standards and ensure the research was conducted in a transparent, respectful, and responsible manner. The ethical safeguards implemented throughout the study contribute to the credibility of the research findings and reflect the commitment of the researcher to uphold academic integrity and protect the interests of all participants.

3.13 Chapter Summary

This chapter has presented the methodology used to examine the determinants of adoption readiness, perceived risk, and behavioural intention toward mobile wallet adoption in Malaysia. The chapter first described the Malaysian research setting and justified the adoption of a positivist paradigm and deductive quantitative approach. It then explained the cross-sectional survey design, the target population, the convenience sampling strategy, and the procedures used to determine an adequate sample size. The chapter also described the data collection methods, questionnaire design, measurement instruments, and pre-testing procedures used to ensure the quality of the instrument and the suitability of the data. Preliminary data assessment procedures were outlined, followed by a discussion of the statistical techniques used in the study, namely descriptive analysis, reliability testing, exploratory factor analysis, multiple regression analysis, and moderation analysis. Ethical considerations were also explained to demonstrate that the study was

conducted in a transparent, respectful, and academically responsible manner. Finally, the methodology presented in this chapter provides a coherent and rigorous basis for the empirical investigation of the proposed conceptual framework. The next chapter presents the findings of the data analysis and discusses the empirical results in relation to the research objectives, hypotheses, and theoretical foundations of the study.

CHAPTER 4: **FINDINGS AND DISCUSSIONS**

4.1 Introduction

This chapter presents the empirical findings of the study and discusses them in relation to the research objectives, conceptual framework, and hypotheses developed in the earlier chapters. The main purpose of this chapter is to examine the determinants of adoption readiness, perceived risk, and behavioural intention toward mobile wallet services in Malaysia using the quantitative data collected from the respondents. In line with the final simplified model, the analysis focuses on direct effects and moderating effects only. The chapter begins with data screening and preparation to ensure that the dataset is suitable for multivariate analysis. This is followed by the pilot study reliability analysis and the assessment of reliability and validity through exploratory factor analysis. The demographic profile of respondents is then presented to describe the characteristics of the sample.

Subsequently, the chapter reports the results of hypothesis testing. Specifically, it examines the influence of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on adoption readiness; the influence of security and privacy concerns on perceived risk; the effects of adoption readiness and perceived risk on behavioural intention; and the moderating effects of demographic factors on the relationships between adoption readiness and behavioural intention, and between perceived risk and behavioural intention. The chapter concludes with an in-depth discussion of the

findings in relation to the theoretical foundations and prior literature. This corrected structure is consistent with the examiner's recommendation to remove mediation and retain only the direct and moderating relationships in the final model.

4.2 Data Screening and Preparation

Prior to the main statistical analyses, the dataset was screened and prepared to ensure its quality, completeness, and suitability for multivariate analysis. Data screening is an essential step in quantitative research because it helps detect anomalies, reduce bias, and confirm that the assumptions underlying inferential statistical procedures are reasonably satisfied. A total of 432 responses were initially collected through the online and offline data collection methods used in this study. The returned questionnaires were reviewed carefully to identify incomplete responses, duplicate cases, and inconsistent or ineligible entries. Responses that did not meet the inclusion criteria or contained excessive missing data were excluded from further analysis. The remaining cases were then retained for statistical testing.

4.2.1 Missing Data Treatment

The first stage of screening involved checking for missing values across all questionnaire items. Cases with substantial missing data were removed, while minor omissions were treated using standard data cleaning procedures. This was done to preserve the integrity of the final dataset while minimizing unnecessary data loss. The objective of this step was to ensure that the retained dataset was sufficiently complete for reliability analysis, factor analysis, and regression-based testing.

4.2.2 Outlier Detection

Outlier analysis was conducted to identify unusual or extreme response patterns that might distort the results. Both univariate and multivariate outlier checks were considered during data preparation. Extreme cases can affect estimates in regression and factor analysis; therefore, responses that were clearly inconsistent with the general data pattern were reviewed and addressed where necessary. This step improved the robustness of the final analysis.

4.2.3 Normality Assessment

The normality of the dataset was examined through descriptive diagnostics such as skewness and kurtosis values, together with the general distributional pattern of the measured variables. Although perfect normality is not always required in social science research, especially in larger samples, assessment remains important for understanding the behaviour of the data and for supporting the use of parametric statistical techniques. The analysis indicated that the dataset was sufficiently acceptable for the intended statistical procedures.

4.2.4 Multicollinearity Diagnostics

Multicollinearity diagnostics were conducted to determine whether the predictor variables were excessively correlated. This step was particularly important for the regression analyses used to test the direct effects in the conceptual model. Tolerance values and variance inflation factor (VIF) statistics were assessed to ensure that multicollinearity did not threaten the interpretability of the regression coefficients. The results indicated that the predictors could be retained for further analysis.

4.2.5 Coding and Labelling

After screening, the data was coded and labelled appropriately for analysis in SPSS. Demographic responses were coded according to category, while Likert-scale items were scored consistently from low to high agreement. Clear coding and labelling ensured smooth data handling and accurate interpretation during the reliability, factor, regression, and moderation analyses.

4.3 Pilot Study Reliability Analysis

Before proceeding to the full-scale data collection, a pilot study was conducted to assess the reliability, clarity, and internal consistency of the questionnaire. Pilot testing is an important step in instrument development because it helps identify ambiguous wording, weak item structure, and possible response problems before the main survey is administered. In this study, the pilot test involved 35 respondents, which is considered adequate for pre-testing and preliminary reliability assessment in behavioural research. The respondents were selected from the target population and consisted of individuals aged 18 years and above who were familiar with or had experience using mobile wallet services.

The pilot questionnaire contained 40 items measured on a five-point Likert scale, covering the main constructs used in the preliminary instrument. The internal consistency of the pilot instrument was evaluated using Cronbach's alpha, which is a widely accepted indicator of scale reliability. The pilot analysis produced an overall Cronbach's alpha of 0.93 and a standardized Cronbach's alpha of 0.94, indicating a very high level of internal consistency among the questionnaire items. In methodological terms, a Cronbach's alpha value above 0.70 is generally regarded as acceptable, while values above 0.90 indicate excellent reliability. Therefore, the pilot results confirm that the instrument was highly reliable and suitable for use in the main study.

The very small difference between the raw alpha value (0.93) and the standardized alpha value (0.94) also suggests that the scale items were consistently measured and that the variance across items did not create major reliability problems. This indicates that the items were functioning cohesively as a set and that respondents interpreted the questionnaire in a relatively stable and consistent manner. Such a result is desirable in a pilot study because it provides early evidence that the instrument is psychometrically sound and appropriate for larger-scale administration.

In addition to the reliability statistics, qualitative feedback from pilot respondents suggested that the questionnaire was generally easy to understand, logically sequenced, and suitable for the Malaysian context. Minor wording revisions were made after the pilot stage, particularly for some compatibility and privacy-related items, to improve clarity and contextual fit. These refinements further strengthened the instrument before the main data collection phase. Overall, the pilot study provided both statistical and practical support for the use of the questionnaire in the full study.

**Table 4- 1:
Pilot Study Reliability Statistics**

Statistic	Value
Cronbach's Alpha	0.93
Cronbach's Alpha (Standardized)	0.94
Number of Items	40

Table 4-1 shows that the pilot instrument achieved a high level of internal consistency. The overall Cronbach’s alpha of 0.93 indicates that the items were strongly related and measured the intended concepts in a coherent way. The standardized alpha of 0.94 further confirms the stability of the instrument when item variances are standardized. Since both values are well above the minimum acceptable threshold, the results demonstrate that the questionnaire had strong reliability at the pilot stage. The instrument

was therefore considered appropriate for full-scale distribution, subject to the minor wording improvements identified during pre-testing.

4.4 Reliability and Validity (Exploratory Factor Analysis Results)

To further assess the adequacy of the measurement model, Exploratory Factor Analysis (EFA) was conducted on the main dataset. EFA is an appropriate procedure for examining the internal structure of the measurement items because it helps determine whether items designed to measure related concepts load together meaningfully. In this study, EFA was used to evaluate the dimensionality, internal consistency, and convergent validity of the constructs measured in the questionnaire before proceeding to the regression-based hypothesis testing. The analysis was conducted using Principal Component Analysis (PCA) with Varimax rotation.

4.4.1 Suitability for Factor Analysis

Before conducting EFA, the data were assessed to determine whether they were appropriate for factor analysis. Two diagnostic tests were used for this purpose: the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The KMO value reported in (Table 4-2) exceeded the recommended threshold, indicating that the sample was adequate for factor analysis. Bartlett's Test of Sphericity was statistically significant, which confirms that the correlation matrix was not an identity matrix and that the variables were sufficiently correlated for factor extraction. These results demonstrate that the dataset was appropriate for factor analysis and that the measurement items shared enough common variance to justify the use of EFA.

**Table 4-2:
KMO and Bartlett's Test Results**

Test	Value
KMO Measure of Sampling Adequacy	0.91
Bartlett's Test of Sphericity	Significant
Degrees of Freedom (df)	630
Significance (p-value)	,0.001

The KMO value of 0.91 indicates excellent sampling adequacy, while the significant Bartlett's test confirms that the variables were sufficiently intercorrelated for factor analysis. Together, these statistics provide strong justification for proceeding with factor extraction and subsequent validity assessment.

4.4.2 Factor Extraction and Rotation

Factor extraction was carried out using Principal Component Analysis with Varimax rotation. This method was selected because it simplifies the factor structure and improves interpretability by maximizing high loadings and minimizing cross-loadings. Factor retention was based on commonly accepted criteria, namely eigenvalues greater than 1.0, cumulative variance explained, scree plot inspection, and theoretical consistency with the study constructs. The analysis resulted in the extraction of eight factors, which jointly explained 65.72% of the total variance. This exceeds the commonly accepted benchmark of 60% for behavioral research and indicates that the retained factors explain a substantial proportion of the observed variation in the data.

4.4.3 Reliability Analysis

Reliability was assessed using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). As shown in Table 4-3, all constructs reported Cronbach's alpha values above the commonly accepted threshold of 0.70, indicating acceptable to strong internal consistency. Composite reliability values were also largely

acceptable, suggesting that the retained items measured their intended constructs in a stable and coherent manner. Although some AVE values were slightly below the 0.50 benchmark, these constructs were retained because their reliability remained acceptable and they were theoretically important to the study. This decision is consistent with Fornell and Larcker's recommendation that constructions with AVE below 0.50 may still be retained when composite reliability and theoretical justification remain adequate.

**Table 4-3:
Summary of Reliability and Convergent Validity**

Construct	Items	α (Cronbach's)	CR	AVE
PU	PU1–PU3	0.75	0.69	0.43
PEOU	PEOU1–PEOU4	0.85	0.75	0.37
SI	SI1, SI2, SI4	0.84	0.82	0.61
COM	COM1–COM4	0.83	0.60	0.34
TRI	TRI1–TRI4	0.88	0.83	0.63
OBS	OBS1–OBS4	0.76	0.71	0.46
PSR	PSR3, PSR4	0.78	0.79	0.65
PRR	PRR1–PRR4	0.81	0.87	0.52
BI	BI1–BI4	0.87	0.79	0.41

Note: AVE values slightly below 0.50 were tolerated for PU, PEOU, and COM due to acceptable CR and theoretical grounding (Fornell & Larcker, 1981).

The results in Table 4-3 indicate that the measurement scales demonstrated satisfactory internal consistency and acceptable convergent validity overall. Constructs such as TRI, PRR, and BI showed particularly strong reliability, while PU, PEOU, and COM remained acceptable despite somewhat lower AVE values. Overall, the results support the reliability of the measurement instrument and justify its use in further inferential analysis.

4.4.4 Sample Factor Loadings

To illustrate the strength of the item-to-factor relationships, selected high-loading items are presented in Table 4-4. Factor loadings above 0.70 are generally considered strong in behavioural research, as they indicate that the items contribute meaningfully to

their intended constructs. The retained items in this study demonstrated acceptable to strong loadings, thereby supporting convergent validity and confirming that the questionnaire items were aligned with the theoretical dimensions they were intended to represent.

**Table 4- 4:
Sample Item Loadings**

Item Statement	Construct	Factor Loading
“Using a mobile wallet is convenient”	PU	0.81
“Mobile wallet usage feels secure”	PSR	0.79
“I am concerned about data privacy”	PRR	0.75
“I intend to continue using mobile wallets”	BI	0.83

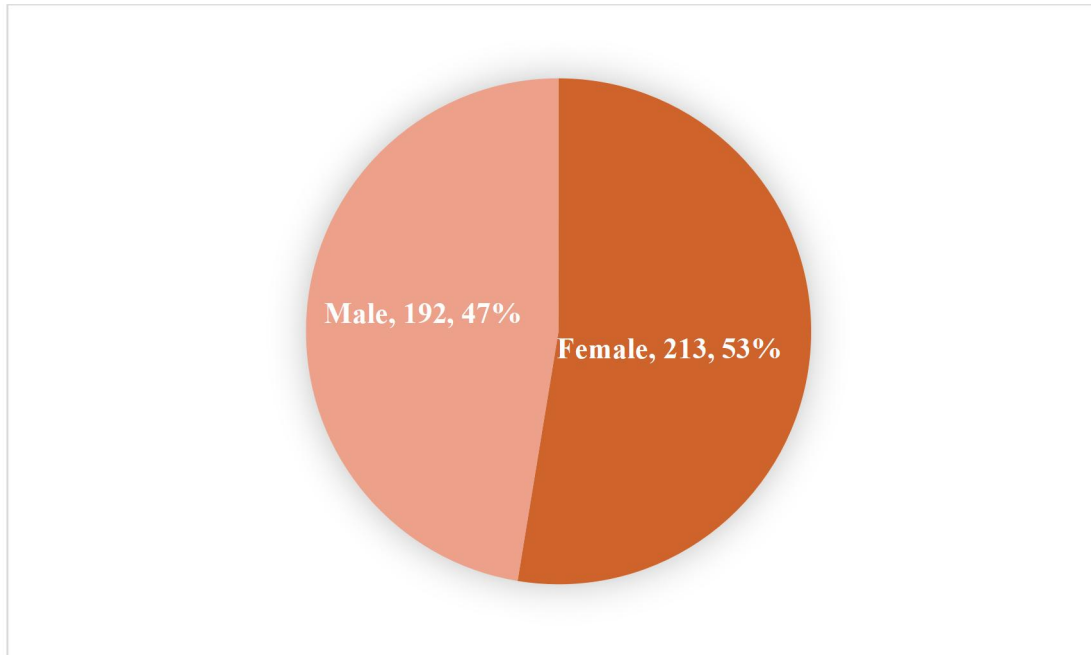
The sample loadings indicate that the retained items were strongly associated with their intended factors. For example, the behavioral intention item recorded a loading of 0.83, while the perceived usefulness item recorded 0.81, both indicating strong alignment with their underlying constructs. These results provide further support for the adequacy of the measurement model and reinforce the conclusion that the instrument was suitable for subsequent regression and moderation analysis.

4.5 Demographic Profile of Respondents

This section presents a descriptive analysis of the demographic characteristics of the 405 valid respondents who participated in this study. Understanding demographic distribution is essential for evaluating the representativeness of the sample and examining the potential moderating effects of demographic variables such as age, gender, education, income, and profession on mobile wallet adoption behavior, as hypothesized in the study.

4.5.1 Gender Distribution

**Figure 4- 1:
Gender Distribution**



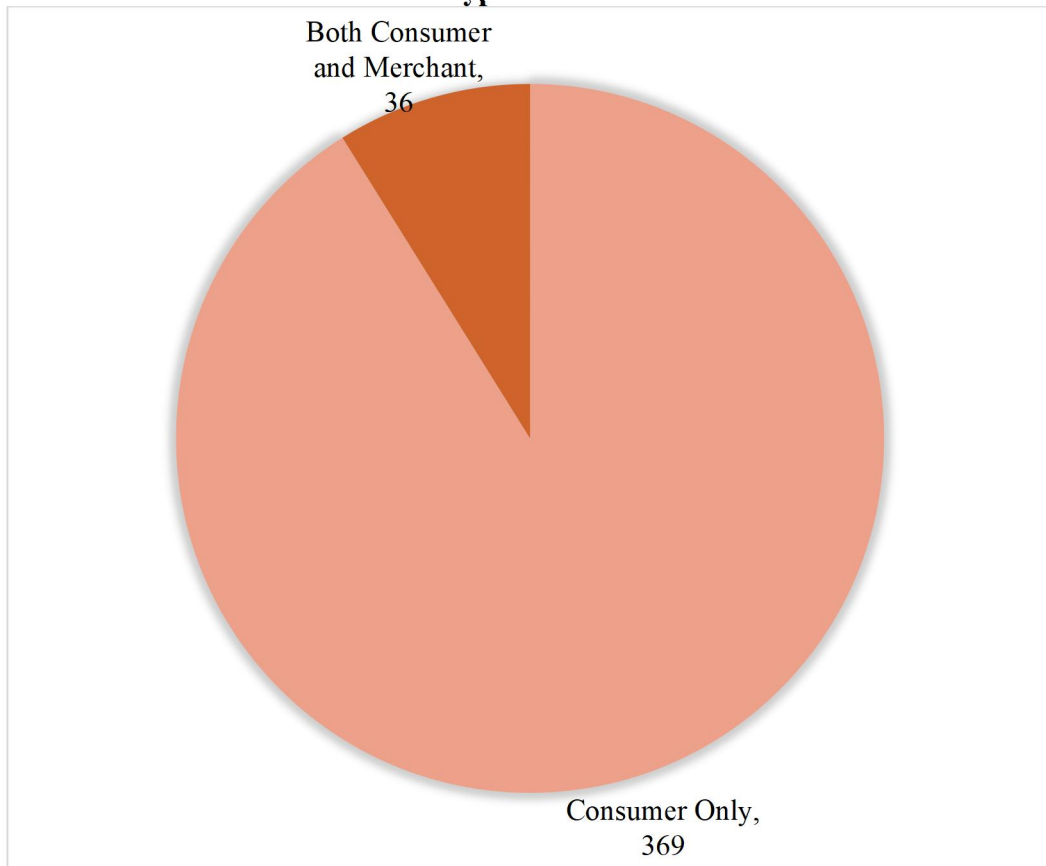
**Table 4- 5:
Gender Distribution**

Category	Frequency	Percentage (%)
Female	213	52.60
Male	192	47.40

Figure 4-1 and Table 4-5 show the sample is almost evenly distributed across genders, with females comprising 52.6% and males 47.4% of the respondents. This balanced representation provides a comprehensive view of gender perspectives toward mobile wallet adoption in Malaysia.

4.5.2: Type of User

**Figure 4- 2:
Type of User**



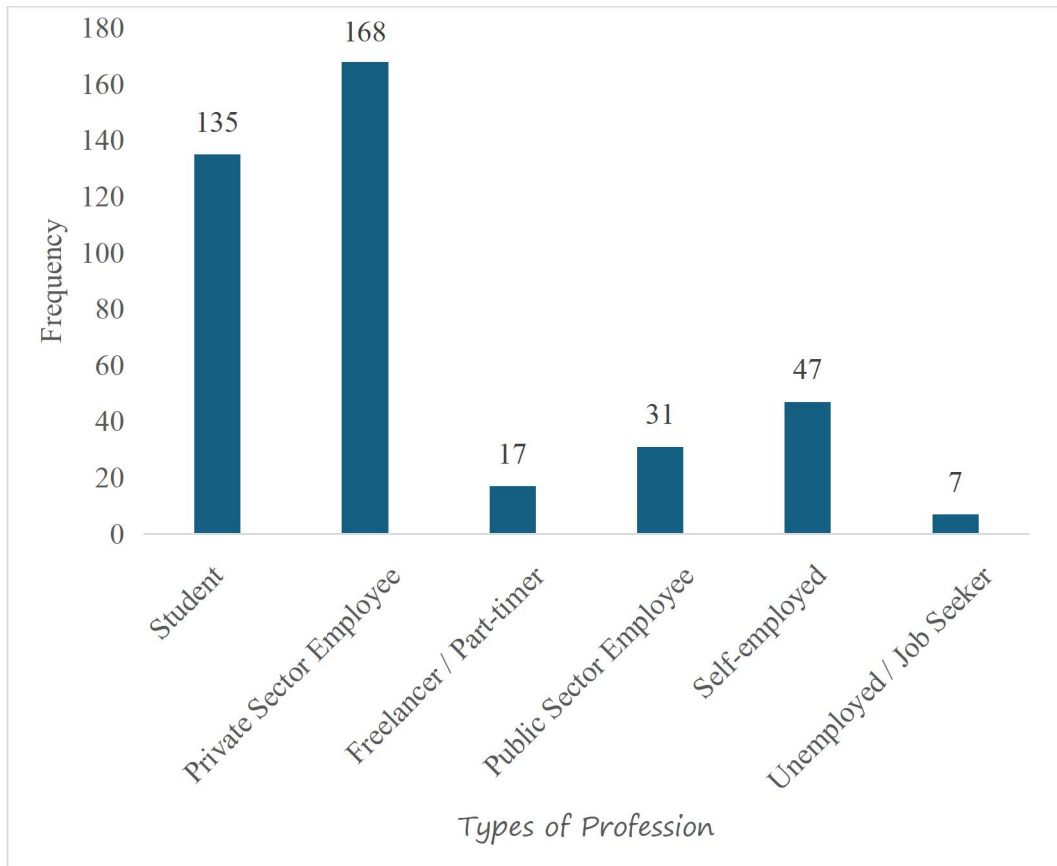
**Table 4- 6:
Type of User**

Category	Frequency	Percentage (%)
Consumer Only	369	91.10
Both Consumer and Merchant	36	8.90

Figure 4-2 and Table 4-6 show most respondents (91.1%) identified as consumers only, while a smaller portion (8.9%) used mobile wallets for both consumer and merchant transactions. This shows that mobile wallets are predominantly used for personal transactions, with limited business-related usage among respondents.

4.5.3: Profession Distribution

**Figure 4-3:
Profession Distribution**



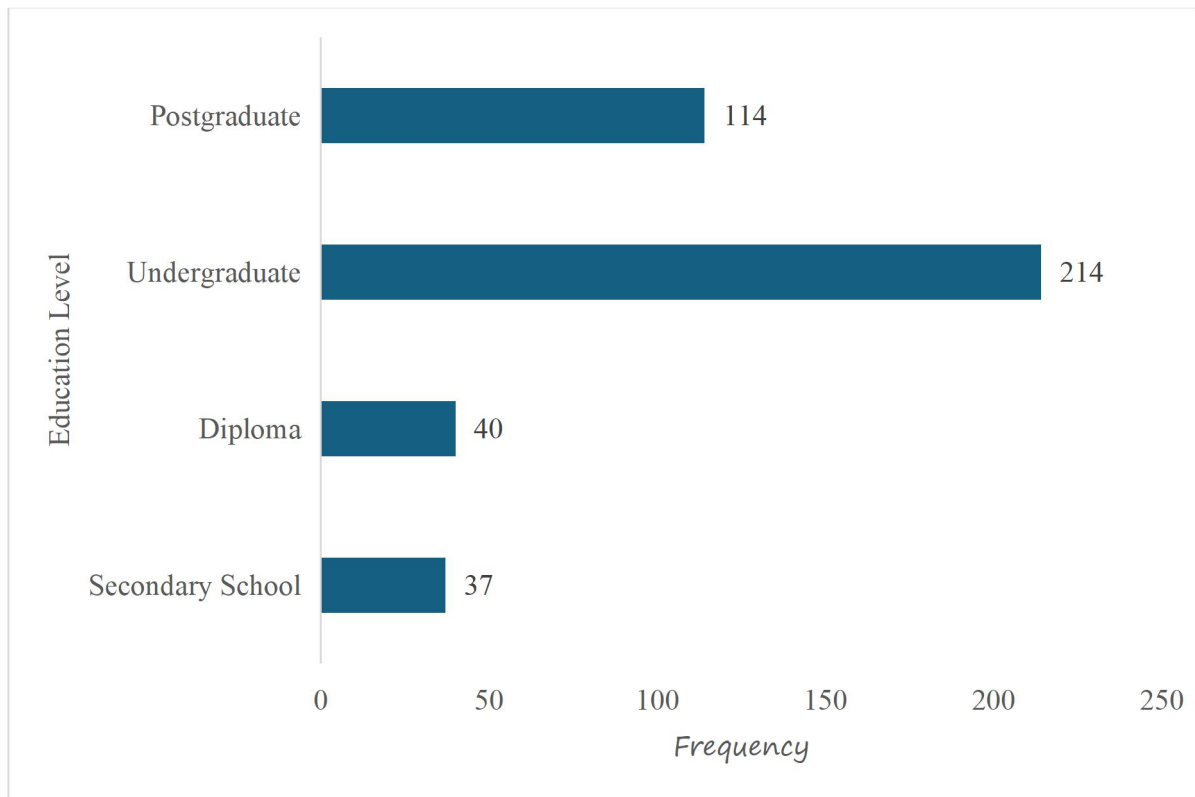
**Table 4-7:
Profession Distribution**

Category	Frequency	Percentage (%)
Student	135	33.30
Private Sector Employee	168	41.50
Freelancer / Part-timer	17	4.20
Public Sector Employee	31	7.70
Self-employed	47	11.60
Unemployed / Job Seeker	7	1.70

Figure 4-3 and Table 4-7 show that private sector employees and students made up the largest occupational groups, accounting for 41.5% and 33.3% respectively. This reflects strong adoption of mobile wallets among the working and learning population. Freelancers and public sector employees form a smaller but noteworthy user group.

4.5.4: Education Level

**Figure 4-4:
Education Level**



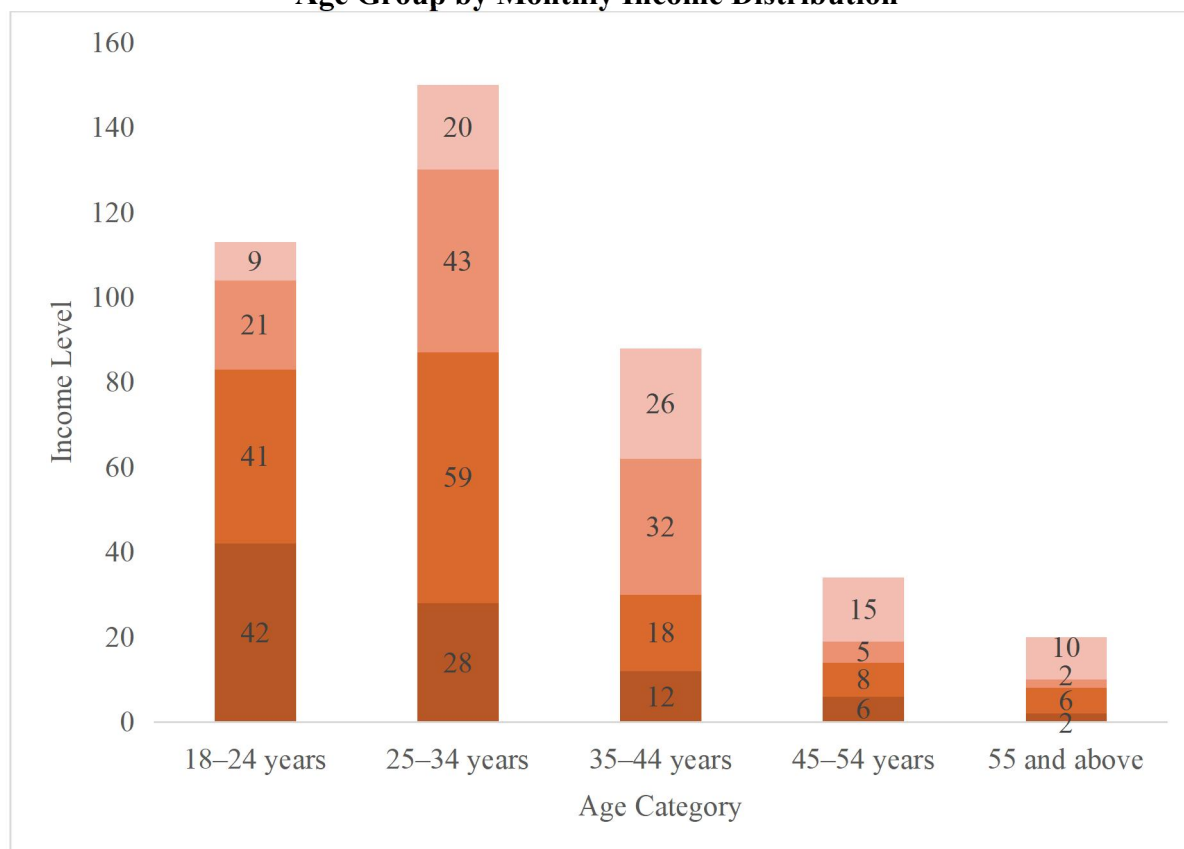
**Table 4-8:
Education Level**

Category	Frequency	Percentage (%)
Secondary School	37	9.10
Diploma	40	9.90
Undergraduate	214	52.80
Postgraduate	114	28.10

Figure 4-4 and Table 4-8 show a significant proportion of users hold a tertiary education qualification: 52.8% undergraduate and 28.1% postgraduate. This suggests a correlation between higher educational attainment and mobile wallet adoption, possibly due to better digital literacy and technology exposure.

4.5.5 Age Group by Monthly Income Distribution

**Figure 4-5:
Age Group by Monthly Income Distribution**



**Table 4-9:
Age Group by Monthly Income Distribution**

Age Group	Below RM 2,000	RM 2,000–RM 3,999	RM 4,000–RM 5,999	RM 6,000 and above	Total (n)	% of Total
18–24 years	42	41	21	9	113	27.90%
25–34 years	28	59	43	20	150	37.00%
35–44 years	12	18	32	26	88	21.70%
45–54 years	6	8	5	15	34	8.40%
55 and above	2	6	2	10	20	4.90%
Total (n)	90	132	103	80	405	100.00%

Figure 4-5 and Table 4-9 show the cross-tabulation of age group by monthly income offers valuable insights into the socio-economic distribution of respondents. Notably, individuals aged 18–24 are predominantly situated in the lower income brackets—specifically below RM 2,000 and RM 2,000–RM 3,999 reflecting their status as

students or those in the early stages of their careers. The 25–34 age group, while being the largest in the sample, exhibits a more balanced spread across all income levels, suggesting a transitional phase toward financial stability. Those within the 35–44 bracket shows a marked presence in the RM 4,000–RM 5,999 and RM 6,000 and above categories, which aligns with mid-career advancement and increased earning potential. Meanwhile, older respondents aged 45 and above tend to cluster in the highest income category, likely representing established professionals or retirees receiving pension income. This distribution underscores the expected progression of income levels with age and professional maturity.

In summary, the demographic profile reflects a diverse and well-educated sample with a strong representation of younger and middle-aged adults who are digitally connected and economically active. This demographic mix is well-aligned with the objectives of the study, particularly in examining the moderating effects of age, education, and income on adoption readiness and perceived risk.

4.6 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) was conducted to validate the underlying factor structure of the measurement items and to assess the construct validity of the research instrument. This step is essential in identifying latent constructs and ensuring that items designed to measure similar concepts group together meaningfully. EFA is particularly suitable for studies based on theoretical models such as the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk frameworks, where the aim is to uncover multidimensional relationships between variables (Hair et al., 2019).

4.6.1 Data Suitability for Factor Analysis

As shown in (Table 4.10), the KMO value for the full-sample EFA was 0.91, indicating excellent sampling adequacy. Bartlett's Test of Sphericity was also statistically significant ($\chi^2 = 6040.65$, $df = 630$, $p < 0.001$), confirming that the variables were sufficiently correlated for factor analysis. These statistics strongly support the suitability of the data for EFA.

**Table 4- 10:
KMO and Bartlett's Test**

Measure	Value
KMO Measure of Sampling Adequacy	0.91
Bartlett's Test of Sphericity	$\chi^2 = 6040.65$
Degrees of Freedom (df)	630
Significance (p-value)	< 0.001

4.6.2 Factor Extraction and Retention Criteria

Factor extraction was conducted using Principal Component Analysis with Varimax rotation. The decision to retain factors was based on four criteria: eigenvalues greater than 1.0, cumulative variance explained, scree plot inspection, and theoretical alignment with the constructs underlying the study. Based on these criteria, eight factors were retained, together explaining 65.72% of the total variance. This exceeds the minimum benchmark commonly expected in behavioral research and indicates that the retained factor solution provides a substantial explanation of the variance in the observed data.

4.6.3 Item Retention and Loadings

Only items with factor loadings of 0.50 or higher were retained for further analysis. The retained items loaded adequately on their respective constructs, indicating acceptable measurement quality for the refined instrument. These results suggest that the retained set

of items demonstrated satisfactory discriminant and convergent properties for the measurement model used in this study, refer to Table 4-11.

**Table 4- 11:
Summary of EFA Results and Reliability**

Construct	No. of Items	Cronbach's Alpha	Composite Reliability (CR)	AVE
PU	3	0.75	0.69	0.43
PEOU	4	0.85	0.75	0.37
SI	3	0.84	0.82	0.61
COM	4	0.83	0.60	0.34
TRI	4	0.88	0.83	0.63
OBS	4	0.76	0.71	0.46
PSR	2	0.78	0.79	0.65
PRR	4	0.81	0.87	0.52
BI	4	0.87	0.79	0.41

Note: AVE values slightly below 0.50 may still be considered acceptable when composite reliability and theoretical justification remain adequate.

4.6.4 Sample Factor Loadings

Selected high-loading items are presented in Table 4-12 to illustrate the strength of the retained item-to-factor relationships. The reported factor loadings ranged from 0.75 to 0.83, indicating acceptable to strong associations between the items and their respective constructs. In behavioural research, factor loadings above 0.70 are generally considered strong, while values above 0.50 remain acceptable depending on theoretical support and overall measurement quality. The sample items reported in Table 4.12 therefore provide additional support for the adequacy of the retained measurement model.

The sample loadings indicate that the retained items were meaningfully associated with their intended factors. For example, the behavioural intention item recorded a loading of 0.83, while the perceived usefulness item recorded 0.81, both indicating strong alignment with their underlying constructs. Likewise, the reported loadings for perceived security-related and privacy-related risk items remained acceptable, supporting the validity of the measurement structure used in this study. Overall, these results reinforce the

conclusion that the measurement instrument was suitable for subsequent inferential analysis.

**Table 4- 12:
Sample High-Loading Items**

Item Statement	Construct	Factor Loading
“Using a mobile wallet is convenient.”	PU	0.81
“Mobile wallet usage feels secure.”	PSR	0.79
“I am concerned about data privacy.”	PRR	0.75
“I intend to continue using mobile wallets.”	BI	0.8

4.6.5 Justification for Construct Validity

The EFA results provide empirical support for the construct validity of the measurement model. The retained items demonstrated acceptable loading patterns, internal consistency remained satisfactory across the measured constructs, and the total variance explained was adequate for behavioural research. Collectively, these findings indicate that the retained measurement structure was sufficiently robust for subsequent hypothesis testing and further statistical analysis in this study.

4.7 Hypothesis Testing

Accordingly, the analysis focuses on the effects of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on adoption readiness; the effect of security and privacy concerns on perceived risk; the effects of adoption readiness and perceived risk on behavioural intention; and the moderating role of demographic factors.

4.7.1 Hypotheses H1–H5: Predictors of Adoption Readiness (AR)

The findings indicate that all five predictors had statistically significant positive effects on adoption readiness. As shown in (Table 4-13), perceived usefulness had a positive and significant influence on adoption readiness ($\beta = 0.181$, $t = 4.31$, $p < 0.001$), supporting H1. This result indicates that when users perceive mobile wallet services as

beneficial and useful in enhancing payment convenience and transaction efficiency, they become more ready to adopt such services. Perceived ease of use also had a significant positive effect on adoption readiness ($\beta = 0.229$, $t = 5.41$, $p < 0.001$), thus supporting H2. This finding suggests that consumers are more prepared to adopt mobile wallet services when they perceive them as simple, understandable, and effortless to use.

Compatibility recorded the strongest positive effect among the predictors ($\beta = 0.257$, $t = 6.02$, $p < 0.001$), thereby supporting H3. This indicates that consumers are more ready to adopt mobile wallet services when the technology fits their daily routines, transaction habits, and lifestyle. Trialability also significantly influenced adoption readiness ($\beta = 0.165$, $t = 3.86$, $p < 0.001$), supporting H4. This shows that opportunities to try or experiment with the technology before full commitment can improve user readiness. Observability likewise exerted a significant positive effect ($\beta = 0.147$, $t = 3.22$, $p = 0.001$), supporting H5, indicating that visible use and visible benefits of mobile wallets encourage consumers to become more prepared to adopt them. Overall, the regression model explained a substantial proportion of the variance in adoption readiness (Adjusted $R^2 = 0.612$), indicating that the selected technological and innovation-related attributes were meaningful predictors of consumers' readiness toward mobile wallet services

Table 4- 13:
Regression Coefficients for AR Predictors

Predictor Construct	Standardised Beta (β)	t-value	p-value	Hypothesis	Result
PU \rightarrow AR	0.181	4.31	<0.001	H1	Supported
PEOU \rightarrow AR	0.229	5.41	<0.001	H2	Supported
COM \rightarrow AR	0.257	6.02	<0.001	H3	Supported
TRI \rightarrow AR	0.165	3.86	<0.001	H4	Supported
OBS \rightarrow AR	0.147	3.22	0.001	H5	Supported

4.7.2 Hypothesis H6: Security and Privacy Concerns and Perceived Risk

Hypothesis H6 examined whether security and privacy concerns significantly influenced perceived risk toward mobile wallet services. The Table 4-14 results indicate

that security and privacy concerns had a statistically significant positive effect on perceived risk. This suggests that users who are more concerned about transaction safety, data protection, privacy intrusion, and possible misuse of personal information are more likely to perceive mobile wallet services as risky. The finding therefore supports H6.

This result is important because it confirms that security- and privacy-related concerns remain central in shaping consumers' perceptions of risk in digital financial services. When users believe that mobile wallet platforms may expose them to fraud, unauthorized access, or personal data vulnerability, their perception of overall risk increases. This finding is consistent with the perceived risk perspective and reinforces the importance of trust, security assurance, and transparent privacy protection in encouraging mobile wallet adoption.

**Table 4- 14:
Regression Coefficients for PR Predictors**

Predictor Construct	Standardised Beta (β)	t- value	p- value	Hypothesis	Result
Security and Privacy Concerns → Perceived Risk	0.782	12.45	<0.001	H6	Supported

4.7.3 Hypotheses H7–H8: Effects of Adoption Readiness and Perceived Risk on Behavioural Intention

The results indicate that both relationships were statistically significant and consistent with the proposed direction of the hypotheses. As shown in Table 4-15, adoption readiness had a significant positive effect on behavioural intention ($\beta = 0.225$, $t = 5.05$, $p < 0.001$), supporting H7. This indicates that users who feel more prepared, confident, and willing to engage with mobile wallet services are more likely to express intention to adopt or continue using them. Perceived risk, on the other hand, had a significant negative effect on behavioural intention ($\beta = -0.410$, $t = -9.67$, $p < 0.001$), supporting H8. This suggests that greater concern over risk significantly reduces users' intention to adopt mobile wallet

services. These findings confirm that behavioural intention is shaped by both enabling and inhibiting factors. Adoption readiness encourages intention, while perceived risk discourages it. This pattern supports the overall logic of the conceptual framework by showing that user preparedness and user concern operate in opposite directions when predicting mobile wallet adoption intention. The positive relationship between AR and BI confirms that users with higher readiness are more likely to adopt mobile wallets. Conversely, higher perceived risk significantly reduces adoption intention, validating H7 and H8.

**Table 4- 15:
Direct Effects on Behavioural Intention**

Predictor → Outcome	Standardised Beta (β)	t-value	p-value	Hypothesis	Result
AR → BI	0.225	5.05	<0.001	H7	Supported
PR → BI	-0.410	-9.67	<0.001	H8	Supported

4.7.4 Hypotheses H9–H10: Moderating Effects of Demographic Factors

The moderating effects of demographic factors were tested to determine whether age, gender, education level, and income altered the strength of the relationship between adoption readiness and behavioural intention, and between perceived risk and behavioural intention. This analysis was conducted in line with the final conceptual framework, which retained moderation as the only higher-order structural effect in the study. Refer to Table 4-16, the results show that demographic effects were selective rather than universal. Specifically, age significantly moderated the relationship between adoption readiness and behavioural intention, while gender significantly moderated the relationship between perceived risk and behavioural intention. In contrast, education level and income did not demonstrate statistically significant moderating effects.

The age moderation result indicates that younger respondents responded more strongly to adoption readiness in forming behavioural intention. In other words, when

younger users felt more ready to adopt mobile wallet services, their intention to use the services increased more strongly than in older groups. The gender moderation result indicates that males were less negatively affected by perceived risk than females, as reflected by the reported coefficient ($\beta = -0.824$, $p = 0.003$). This suggests that risk perceptions reduced behavioural intention more strongly among female users than among male users. Meanwhile, education level and income did not significantly change the strength of the tested relationships, indicating that not all demographic characteristics operated as meaningful moderators in this study. Given these findings, H9 and H10 may be interpreted as partially supported, because significant moderation was observed only for selected demographic dimensions

**Table 4- 16:
Moderation by Demographics**

Moderator Variable	Pathway	β Coefficient	p-value	Hypothesis	Result
Age	AR → BI	Significant	< 0.05	H9	Supported
Gender	PR → BI	-0.824	0.003	H10	Supported
Education Level	AR / PR → BI	n.s.	> 0.05	H9/H10	Not Supported
Income	AR / PR → BI	n.s.	> 0.05	H9/H10	Not Supported

4.7.5 Summary of Hypothesis Testing

The hypothesis testing results provide strong support for the final simplified model adopted in this study. Refer to Table 4-17, perceived usefulness, perceived ease of use, compatibility, trialability, and observability were all found to have significant positive effects on adoption readiness. Security and privacy concerns significantly increased perceived risk. Adoption readiness positively influenced behavioural intention, whereas perceived risk negatively influenced behavioural intention. The moderation analysis further indicated that demographic factors exerted selective moderating influence, particularly through age and gender. Overall, the findings support the argument that mobile wallet adoption in Malaysia is influenced by both positive drivers and negative barriers. The

results also demonstrate that behavioural intention is shaped not only by technological and psychological perceptions but also, in selected cases, by demographic context.

Table 4- 17:
Hypotheses Testing Results Overview

Hypothesis	Relationship	Result	Decision
H1	PU → AR	Significant	Supported
H2	PEOU → AR	Significant	Supported
H3	Compatibility → AR	Significant	Supported
H4	Trialability → AR	Significant	Supported
H5	Observability → AR	Significant	Supported
H6	Privacy & Security Risk → PR	Significant	Supported
H7	AR → BI	Significant	Supported
H8	PR → BI	Significant	Supported
H9	Demographics × AR → BI	Partially Significant	Partially Supported
H10	Demographics × PR → BI	Partially Significant	Partially Supported

4.8 Discussion of Findings

4.8.1 Determinants of Adoption Readiness

The first major finding of this study is that perceived usefulness, perceived ease of use, compatibility, trialability, and observability all significantly and positively influence adoption readiness toward mobile wallet services. This result is theoretically consistent with the integrated use of the Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT), both of which suggest that favourable technological and innovation-related perceptions strengthen user acceptance of new systems. In the present study, these factors did not merely influence intention directly; rather, they enhanced the user's readiness to adopt the service, thereby highlighting the importance of psychological preparedness in digital financial decision-making.

Perceived usefulness significantly improved adoption readiness, which is consistent with Davis's proposition that technologies are more likely to be accepted when users perceive them as beneficial to task performance. In the Malaysian mobile wallet context, usefulness is likely to be interpreted in practical terms, such as faster payment processing,

reduced transaction effort, convenience in day-to-day purchases, and easier financial management. This explains why usefulness matters: mobile wallets are adopted not because they are technologically novel, but because they offer concrete advantages in routine consumer transactions. This finding is aligned with prior mobile payment studies that identify usefulness as a dominant determinant of digital financial adoption, particularly when consumers are assessing whether the service meaningfully improves their lives.

Perceived ease of use also had a significant positive effect on adoption readiness, which further supports TAM. This result indicates that readiness is strengthened when the user perceives mobile wallet platforms as intuitive, easy to learn, and easy to operate. This finding is especially important in the Malaysian context because adoption remains uneven across user groups, including older adults and users with lower digital familiarity. If a mobile wallet is perceived as difficult, technologically complex, or cognitively demanding, readiness is likely to weaken even if the service is functionally useful. This explains why user interface simplicity, clear navigation, and uncomplicated transaction procedures are strategically important for providers. The result also corresponds with prior studies that show ease of use reduces perceived barriers and increases confidence in adopting financial technologies.

Among the predictors of adoption readiness, compatibility emerged as the strongest influence in the reported results. This finding is theoretically meaningful because IDT emphasizes that innovations are more readily adopted when they fit users' values, routines, and prior experiences. In practical terms, consumers are more likely to feel ready to adopt a mobile wallet when it integrates naturally into their lifestyle, payment habits, shopping behaviour, and smartphone use patterns. Compatibility likely matters strongly in Malaysia because mobile wallet usage is often embedded in routine activities such as online shopping, ride-hailing, food delivery, transportation, and bill payment. Therefore, the more

seamlessly the service aligns with what consumers already do, the more psychologically ready they become to adopt it. This strengthens the argument that mobile wallet adoption is not only a matter of technological capability but also of behavioural fit.

Trialability and observability also significantly influenced adoption readiness, and these findings reinforce the relevance of IDT in the present study. Trialability suggests that consumers become more ready to adopt mobile wallet services when they can experiment with them before committing fully. In the mobile wallet context, this may take the form of cashback campaigns, promotional transactions, limited risk first use, or merchant incentives. These experiences reduce uncertainty and allow consumers to form confidence through direct exposure. Observability, in contrast, reflects the extent to which the benefits of mobile wallets are visible to others. When users observe peers, family members, or merchants using mobile wallets successfully, the service becomes more normalized and less intimidating. This visibility likely strengthens social legitimacy and reduces uncertainty, thereby improving readiness. Taken together, the findings suggest that readiness is formed through a combination of perceived practical value, cognitive simplicity, behavioural fit, and social exposure.

A broader theoretical implication of these results is that adoption readiness should be treated as more than a peripheral or transitional concept. The findings suggest that readiness captures a meaningful psychological stage between evaluating the features of a technology and forming intention to use it. This is an important contribution because many earlier adoption studies focus heavily on direct intention models, whereas the present findings show that user preparedness deserves more explicit conceptual attention.

4.8.2 Impact of Security and Privacy Concerns on Perceived Risk

The second major finding is that security and privacy concerns significantly increase perceived risk toward mobile wallet services. This result confirms the importance of perceived risk theory in explaining consumer behaviour in digital financial environments. Mobile wallets involve monetary value, sensitive personal data, and technological dependence, all of which create conditions in which users may worry about fraud, unauthorized access, data misuse, transaction failure, and insufficient privacy protection. In this sense, the finding is not surprising; rather, it reflects the structural nature of digital financial services, where convenience is always evaluated alongside vulnerability.

This result also explains why some consumers remain hesitant even when mobile wallet platforms appear useful and user-friendly. Functional appeal alone does not eliminate concern. Users may acknowledge the convenience of mobile wallets yet still perceive them as risky if they doubt the safety of the transaction system or the integrity of data handling practices. This supports the arguments of Featherman and Pavlou, who identified perceived risk as a major barrier to the adoption of electronic services, especially when the consumer must trust an invisible digital infrastructure. In the Malaysian context, the salience of security and privacy concerns is likely amplified by public awareness of online scams, phishing, digital fraud, and identity-related cyber threats. As a result, even technologically capable users may become cautious when evaluating whether a mobile wallet is safe enough to adopt.

The finding also carries practical significance. It suggests that efforts to expand mobile wallet adoption should not focus only on marketing convenience and incentives, but also on reducing consumers' sense of vulnerability. Stronger authentication systems, transparent privacy policies, better fraud-prevention communication, and visible security assurances can all play a role in reducing perceived risk. Thus, security and privacy are not merely technical back-end matters; they are consumer-facing determinants of adoption.

4.8.3 Effects of Adoption Readiness and Perceived Risk on Behavioural Intention

The third major finding is that adoption readiness positively influences behavioural intention, whereas perceived risk negatively influences it. These two relationships are especially important because they show that behavioural intention is shaped by both positive and negative psychological pathways. This confirms the value of the integrated framework used in the study: mobile wallet adoption intention is not driven solely by utility-related beliefs, nor solely by fear-based concerns, but by the balance between preparedness and perceived vulnerability.

The positive effect of adoption readiness on behavioural intention suggests that users who feel more prepared, confident, and psychologically open to using mobile wallets are more likely to intend to adopt them. This is consistent with the broader logic of TAM, where favourable technology evaluations strengthen acceptance, but the present result goes further by showing that readiness itself functions as an immediate predictor of intention. In other words, it is not enough for users to merely perceive the technology as attractive; they must also feel personally ready to use it. This finding is important because it demonstrates that behavioural intention emerges not only from evaluating the technology, but also from evaluating oneself in relation to the technology. That insight enriches the literature by highlighting the role of internal preparedness in digital financial adoption.

The negative effect of perceived risk on behavioural intention confirms that concern remains a major inhibitor of mobile wallet adoption. Users who believe that mobile wallets expose them to privacy invasion, financial loss, fraud, or insecurity are less likely to adopt them. This result aligns with prior literature showing that risk can undermine intention even when functional benefits are strong. It also suggests that trust and confidence are fragile in digital payment environments. If the user perceives the service as unsafe, intention weakens regardless of convenience. This has important

implications for both theory and practice, because it demonstrates that adoption models in digital finance must explicitly account for perceived vulnerability, not just perceived benefit. Together, these findings suggest that behavioural intention toward mobile wallet use in Malaysia is formed through a dual mechanism: readiness strengthens intention, while risk weakens it. This duality is one of the strongest conceptual contributions of the study because it shows that adoption behaviour is simultaneously enabled and constrained by competing consumer perceptions.

4.8.4 Moderating Role of Demographic Variables

The moderation analysis revealed that demographic factors influenced the model in a selective rather than universal way. Specifically, age significantly moderated the relationship between adoption readiness and behavioural intention, while gender significantly moderated the relationship between perceived risk and behavioural intention. By contrast, education level and income were not significant moderators in the tested relationships. This pattern is important because it suggests that demographic variables matter, but not all of them matter in the same way or to the same extent.

The significant moderation effect of age suggests that younger consumers were more likely to translate adoption readiness into behavioural intention. This finding is consistent with the literature reviewed in Chapter Two, which argued that younger users tend to be more familiar with smartphones, mobile applications, and digital ecosystems. Because of that familiarity, once readiness is established, intention forms more strongly and more quickly among younger users. Older users, however, may require stronger reassurance, higher confidence, or repeated exposure before readiness becomes actual behavioural intention. This result is also consistent with the broader Malaysian context, where younger users have been observed to adopt mobile wallets at much higher rates than

older users. In theoretical terms, the age effect confirms that readiness does not operate equally across all users; it is filtered through generational differences in digital exposure and confidence.

The gender moderation result indicates that males were less negatively affected by perceived risk than females. This suggests that female users may be more sensitive to concerns about privacy, financial uncertainty, or digital safety when evaluating mobile wallet adoption. This does not imply that female users are less capable of adopting mobile wallets; rather, it suggests that perceived risk carries stronger behavioural consequences for them. This finding is plausible in digital finance because security and trust concerns often affect segments of users differently depending on prior experience, confidence, and risk sensitivity. It also reinforces the practical argument that mobile wallet providers should not treat all consumers as behaviourally homogeneous. Risk communication, interface design, fraud awareness, and reassurance strategies may need to be more targeted and user sensitive.

The non-significant findings for education level and income are also worth discussing. These results suggest that, within this sample, education and income did not materially change the strength of the readiness–intention or risk–intention relationships. One possible explanation is that mobile wallet use has become sufficiently widespread across socio-economic groups that education and income no longer create sharp differences in the way readiness and risk influence intention. Another possibility is that digital familiarity now depends more on age and lived technological experience than on formal education or income level alone. This is theoretically relevant because it cautions against assuming that all demographic variables will function as equally important moderators in all settings.

4.8.5 Chapter Summary

This discussion has shown that the findings of the study are consistent with the integrated theoretical framework combining TAM, IDT, and perceived risk theory. Perceived usefulness, perceived ease of use, compatibility, trialability, and observability significantly strengthened adoption readiness. Security and privacy concerns significantly increased perceived risk. Adoption readiness, in turn, positively influenced behavioural intention, while perceived risk negatively influenced it. The moderation analysis further demonstrated that age and gender selectively shaped these behavioural pathways, whereas education level and income did not exert significant moderation effects.

CHAPTER 5: CONCLUSIONS

5.1 Introduction

This chapter presents the conclusion and recommendations of the study on the determinants of adoption readiness, perceived risk, and behavioural intention toward mobile wallet adoption in Malaysia. The chapter synthesizes the major findings of the research, discusses its theoretical and practical contributions, identifies its limitations, and proposes directions for future research. In doing so, this chapter brings together the key arguments developed throughout the thesis and explains their relevance to the broader literature on digital payment adoption and financial technology use in emerging markets. The chapter is structured around the final research model, which examined the effects of perceived usefulness, perceived ease of use, compatibility, trialability, and observability on adoption readiness; the effect of security and privacy concerns on perceived risk; the effects of adoption readiness and perceived risk on behavioural intention; and the moderating role of demographic factors.

The study was undertaken in response to the growing importance of mobile wallet services in Malaysia's digital payment landscape. Malaysia has experienced rapid digital payment growth, supported by policy initiatives, expanding fintech ecosystems, and increasing public familiarity with app-based financial services (Bank Negara Malaysia, 2022, 2024; The Star, 2024; Upstack Studio, 2024). At the same time, differences in

confidence, digital familiarity, and perceived security continue to shape adoption behaviour across consumer groups. For that reason, this research sought to develop an empirically grounded explanation of mobile wallet adoption that integrates both enabling and inhibiting factors within a coherent conceptual framework.

5.2 Summary of Findings

This study investigated the determinants of mobile wallet adoption in Malaysia by focusing on adoption readiness, perceived risk, behavioural intention, and the moderating role of demographic factors. The empirical findings provide strong support for the proposed relationships in the final conceptual framework and confirm that mobile wallet adoption is shaped by both positive and negative psychological mechanisms. The study found that perceived usefulness, perceived ease of use, compatibility, trialability, and observability all had significant positive effects on adoption readiness. These findings indicate that consumers are more likely to feel prepared to adopt mobile wallet services when they perceive them as beneficial, simple to use, compatible with their routines, easy to try, and visible in their social environment. In the reported regression results, compatibility emerged as the strongest predictor of adoption readiness, followed by perceived ease of use and perceived usefulness, suggesting that behavioural fit and usability are especially important in encouraging consumer preparedness.

The study also found that security and privacy concerns significantly increased perceived risk. This means that when users become more worried about unauthorized access, fraud, misuse of data, or insufficient privacy protection, they are more likely to evaluate mobile wallet services as risky. In turn, behavioural intention was shaped by two opposing forces: adoption readiness had a significant positive influence on behavioural intention, while perceived risk had a significant negative influence. These results show that

consumers are more likely to adopt mobile wallet services when they feel prepared and confident, but less likely to adopt them when they perceive greater uncertainty and vulnerability. The moderation analysis further demonstrated that demographic effects were selective rather than universal. Age significantly moderated the relationship between adoption readiness and behavioural intention, while gender significantly moderated the relationship between perceived risk and behavioural intention. Education level and income did not demonstrate significant moderating effects in the final analysis.

Taken together, the findings suggest that mobile wallet adoption in Malaysia is not explained by technological attributes alone. Rather, it is shaped by the interaction of utility perceptions, ease of use, innovation fit, readiness, perceived vulnerability, and selected demographic influences. This overall pattern is consistent with the integrated theoretical basis of the study and supports the argument that digital financial adoption should be understood as a process that involves both cognitive evaluation and psychological assurance.

5.3 Theoretical Contributions

This study contributes to the literature on mobile wallet adoption and digital financial services in several important ways. First, it contributes by integrating the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and perceived risk theory within a single explanatory framework. TAM explains how consumers evaluate usefulness and ease of use (Davis, 1989; Venkatesh et al., 2003), while IDT explains how consumers respond to compatibility, trialability, and observability as characteristics of innovation (Rogers, 2003). Perceived risk theory explains how uncertainty and possible negative outcomes influence consumer reluctance in digital environments (Featherman & Pavlou, 2003; Akbar et al., 2020). By combining these perspectives, the study provides a

broader and more balanced explanation of mobile wallet adoption than models that rely only on positive technology evaluations.

Second, the study contributes by positioning adoption readiness as a central explanatory construct. Prior research on mobile and internet banking has frequently focused on behavioural intention as the immediate outcome of technology beliefs (Oliveira et al., 2016; Baabdullah et al., 2019; Alalwan et al., 2022). The present study shows that readiness deserves more explicit attention because it captures the degree to which consumers feel psychologically and behaviourally prepared to adopt a digital financial service. The findings indicate that readiness is meaningfully shaped by usefulness, ease of use, compatibility, trialability, and observability, and that readiness in turn significantly strengthens behavioural intention. This extends the literature by showing that adoption does not emerge only from technology evaluation, but also from user preparedness.

Third, the study strengthens the theoretical relevance of IDT variables in the mobile wallet context. Although compatibility, trialability, and observability have long been recognized as innovation attributes (Rogers, 2003), they are often underemphasized relative to TAM variables in digital payment research. In this study, all three were found to significantly enhance adoption readiness, with compatibility emerging as especially influential. This suggests that mobile wallet adoption depends not only on whether the service is useful or easy to use, but also on whether it fits users' established routines, can be experienced before full commitment, and is visible in real-world use. This theoretical contribution is important because it broadens the understanding of fintech adoption beyond functional performance alone.

Fourth, the study reinforces the role of perceived risk as a direct inhibitor of behavioural intention. The findings show that security and privacy concerns significantly increase perceived risk, and perceived risk significantly reduces behavioural intention. This

supports prior research arguing that trust, safety, and perceived vulnerability are critical in mobile payment environments (Alsharif et al., 2021; Akbar et al., 2020). It also confirms that adoption models in financial technology must account for users' negative expectations, not only their positive evaluations. In this respect, the study contributes to a more realistic understanding of digital financial adoption by showing that consumer intention is shaped by both confidence and concern.

Finally, the study contributes by showing that demographic moderation is selective. Age and gender significantly influenced specific pathways, whereas education level and income did not. This finding is theoretically relevant because it suggests that demographic variables should not be treated as uniformly influential. Instead, they should be examined in relation to specific behavioural relationships and contextual conditions. This provides a more nuanced view of demographic effects in mobile wallet adoption research and contributes to the literature by emphasizing that user heterogeneity matters, but not in a simplistic or universal way.

5.4 Implication of the Study

The findings of this study have important implications for fintech providers, financial institutions, policymakers, regulators, and digital literacy initiatives. For fintech providers and mobile wallet operators, the results suggest that adoption can be strengthened by focusing on the dimensions that improve readiness. Since perceived usefulness, perceived ease of use, compatibility, trialability, and observability significantly influenced adoption readiness, service providers should ensure that their platforms are not only technically functional but also easy to use, relevant to consumers' daily transaction habits, and easy to try with minimal perceived commitment. Features such as intuitive interfaces, smooth onboarding processes, broad merchant acceptance, reward-based trial

campaigns, and socially visible use cases may help increase user preparedness and strengthen adoption.

The findings also imply that security and privacy management must remain central to adoption strategy. Since these concerns significantly increase perceived risk, providers must invest in both actual protection and visible reassurance. Strong authentication, transparent privacy policies, clear fraud-prevention communication, and responsive support systems are important because they reduce the consumer's sense of vulnerability. This is particularly important in digital payment environments, where users may abandon a service if they believe their money or information is not adequately protected. Therefore, security should be treated not only as a technical requirement but also as a behavioural determinant of consumer adoption.

For policymakers and regulators, the results suggest that the promotion of mobile wallet adoption should go beyond infrastructure and payment innovation alone. Public confidence in digital finance depends on secure ecosystems, consumer protection, and trust-building institutions. This aligns with the broader strategic emphasis in Malaysia's financial transformation agenda and digital finance policies (Bank Negara Malaysia, 2022, 2024). The study therefore supports policies that strengthen cybersecurity awareness, improve consumer recourse mechanisms, and enhance regulatory oversight of digital payment service providers. In addition, because demographic moderation was found to be selective, public initiatives may be more effective when they are targeted at groups who remain more cautious or less digitally confident rather than applying a single awareness strategy to all users.

For educators, training institutions, and community-based organizations, the findings highlight the value of digital financial literacy and confidence-building. Since readiness significantly increases behavioural intention, initiatives should not only explain

how mobile wallets function but also help users feel prepared to use them. Practical demonstrations guided onboarding sessions, scam-awareness programmes, and community-based training may help translate knowledge into readiness and readiness into actual intention. This is especially relevant for segments of the population that may require stronger reassurance before adopting digital financial services.

5.5 Conclusion of the Study

This study set out to examine the determinants of adoption readiness, perceived risk, and behavioural intention toward mobile wallet adoption in Malaysia. Using an integrated theoretical framework based on TAM, IDT, and perceived risk theory, the study tested how technological and innovation-related factors shape readiness, how security and privacy concerns shape perceived risk, and how readiness and risk influence behavioural intention, with demographic factors acting as moderators in selected relationships.

The results show that mobile wallet adoption in Malaysia is influenced by a combination of practical value, usability, behavioural fit, social visibility, preparedness, and perceived vulnerability. Consumers are more likely to intend to adopt mobile wallet services when they feel ready to use them and when they perceive the services as useful, easy to use, compatible with their routines, trial-friendly, and visible in everyday life. At the same time, concerns relating to privacy and security raise perceived risk, which weakens intention. The moderation results further show that age and gender shape selected behavioural relationships, confirming that adoption behaviour varies across segments of the population.

In conclusion, the study demonstrates that mobile wallet adoption in Malaysia cannot be understood solely through technological attractiveness or market availability. It must also be understood through the user's readiness to adopt, the degree of risk perceived

in digital financial transactions, and the contextual influence of selected demographic differences. The study therefore provides a coherent and empirically grounded explanation of mobile wallet adoption and contributes useful knowledge for both scholarship and practice in digital financial services.

5.6 Limitations and Future Research Directions

Although the study offers useful insights, several limitations should be acknowledged. First, the study employed a cross-sectional survey design, meaning that the data were collected at one point in time. While this design is appropriate for testing relationships among constructs, it does not allow changes in user readiness, risk perception, or intention to be observed over time. Future research may adopt longitudinal designs to examine how these perceptions evolve as consumers become more experienced with mobile wallet services. Second, the study used non-probability convenience sampling, which was appropriate for accessing a broad group of mobile wallet users but limits statistical generalizability to the entire Malaysian population. Future studies could use stratified or probability-based sampling methods to improve representativeness and strengthen external validity.

Third, the study focused on a defined set of variables derived from TAM, IDT, and perceived risk theory. Although these variables provided a strong explanatory basis, other potentially important constructs such as trust, facilitating conditions, habit, service quality, social norms, and platform reputation were not included in the final model. Future researchers may extend the framework by incorporating these variables to provide a broader understanding of mobile wallet adoption. This is especially relevant in financial technology research, where adoption behaviour may also depend on institution-based trust and ongoing usage experience (Baabdullah et al., 2021; Alalwan et al., 2022).

Fourth, the study was conducted in Malaysia only. Although the Malaysian context is highly relevant, the findings may not be directly transferable to countries with different digital infrastructures, regulatory systems, or consumer cultures. Future comparative studies across countries or regions may therefore be valuable in assessing the broader applicability of the model. Finally, since the moderation results showed selective demographic influence, future research could explore additional contextual variables such as urban-rural location, prior fintech experience, smartphone dependency, or digital trust orientation to better explain user differences in adoption behaviour.

5.7 Recommendations

Based on the findings of this study, several strategic recommendations are proposed for key stakeholders. These recommendations aim to promote broader, more secure, and equitable adoption of mobile wallet services in Malaysia by addressing critical factors such as user readiness, perceived risk, and demographic variability.

5.7.1 For Fintech Providers

Fintech companies must play a central role in facilitating the adoption of mobile wallet services by creating user-centric technologies that accommodate diverse needs and digital competencies. Firstly, developers should prioritize the simplification of user interfaces (UIs). A clean, intuitive UI is essential for users with limited digital literacy, particularly older adults and those in rural areas (Widjaja et al., 2023). This involves minimizing the number of steps needed to complete a transaction, using visual icons, and enabling accessibility features such as voice commands and language selection. Secondly, introducing trialability features and gamification can enhance adoption readiness.

Trialability allows users to explore basic features before full registration, thereby reducing psychological resistance (Rogers, 2003). Gamification strategies, including point-based rewards, referral bonuses, and interactive tutorials, increase engagement and observability, encouraging peer-driven adoption. These features also improve user retention by making the app experience enjoyable and socially relevant.

Security remains a paramount concern. Fintech providers must transparently communicate their data protection policies and embed advanced security technologies such as end-to-end encryption, biometric verification, and real-time fraud alerts. According to Lee et al. (2023), visibility of robust security measures significantly reduces perceived risk, a known barrier to mobile wallet adoption. Furthermore, clear onboarding tutorials, FAQ sections, and 24/7 customer support are essential to build trust and empower users. Providers should regularly update apps to maintain security compliance and incorporate user feedback to improve functionality. By addressing both technological and emotional barriers, fintech developers can significantly boost mobile wallet usage across Malaysia.

5.7.2 For Policymakers and Regulators

Government agencies and financial regulators are critical to shaping an enabling ecosystem for digital financial adoption. A primary recommendation is the implementation of nationwide digital literacy campaigns. These should be designed in collaboration with NGOs, universities, and tech companies, ensuring alignment with the needs of different communities, especially those in rural and low-income areas (BNM, 2022). Digital inclusion must also be achieved through infrastructural support. Policymakers should consider subsidizing mobile internet and smartphone access for underserved populations. Initiatives such as device grant schemes or zero-rated access to financial education

platforms can bridge access gaps and promote equitable participation in the digital economy (World Bank, 2021).

Strong regulatory frameworks must also be enforced to build consumer trust. Mandatory compliance with personal data protection regulations such as Malaysia's Personal Data Protection Act (PDPA) will ensure fintech operators maintain transparent, ethical practices. Regular audits, fintech certification standards, and public disclosures of cybersecurity incidents are tools that can enhance public confidence in mobile wallet services (KPMG, 2023). Moreover, the central bank and financial regulators should create sandboxes for fintech innovation. These controlled environments allow new digital financial services to be tested safely and scaled efficiently. They also provide a space for collaboration between regulators and fintech startups, fostering innovation without compromising consumer protection.

5.7.3 For Educators and Training Institutions

Educators and training institutions have a significant role in embedding digital financial literacy across formal and informal learning ecosystems. The integration of mobile wallet and digital finance topics into school and university curricula can ensure that young Malaysians enter adulthood with foundational digital financial skills. Subjects could include secure transaction practices, understanding fintech applications, managing online payments, and recognizing phishing or fraud attempts (Alsharif et al., 2021). Beyond formal education, community centres and adult learning institutions should offer mobile-friendly, multilingual content for users with limited educational backgrounds. Courses should be tailored to real-world needs, such as paying bills online, budgeting with e-wallet apps, or using QR codes for purchases. Training formats could include interactive mobile

apps, micro-learning videos, or hands-on workshops delivered in collaboration with fintech companies.

Public education campaigns using mass media, influencers, and public service announcements can further promote awareness. According to Venkatesh et al. (2022), peer learning and community-based training models are highly effective in digital skills dissemination among older adults and rural communities. By cultivating digital fluency across all age and socioeconomic groups, education systems can help close the digital divide and empower Malaysians to participate confidently in the growing digital economy.

5.7.4 For Future Researchers

This study also opens avenues for future academic inquiry. First, researchers should conduct longitudinal studies to track behavioural changes over time. Unlike cross-sectional studies, longitudinal research can capture how consumer preferences evolve with new features, government policies, or cybersecurity threats (Hair et al., 2019). It also allows assessment of the long-term impact of interventions such as literacy training or incentive schemes. Second, future research should explore deeper psychological and cultural influences on mobile wallet adoption. Variables such as trust propensity, risk aversion, cultural values (e.g., collectivism vs. individualism), and social identity may significantly mediate or moderate adoption behaviour, especially in multicultural societies like Malaysia (Hofstede Insights, 2023).

Third, comparative studies across Southeast Asian countries could yield insights into regional best practices. Countries like Singapore, Indonesia, and Thailand have advanced digital payment ecosystems, offering valuable benchmarks. Comparative research can identify transferable strategies and help develop regionally adaptable fintech policies. Lastly, future studies should incorporate behavioural data (e.g., usage logs,

transaction patterns) alongside survey responses to reduce bias and improve predictive accuracy. Mixed methods designs and machine learning techniques could also enhance the precision and relevance of adoption models. In conclusion, addressing the recommendations proposed here can significantly advance Malaysia's vision of becoming a cashless, digitally inclusive nation. Through coordinated efforts between fintech providers, educators, policymakers, and researchers, the barriers to mobile wallet adoption can be systematically dismantled.

5.8 Chapter Summary

This final chapter has consolidated the findings, implications, and overall contributions of the study investigating the determinants of mobile wallet adoption in Malaysia. Grounded in the integration of the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and the perceived risk framework, the research provided a comprehensive perspective on how Adoption Readiness (AR) and Perceived Risk (PR) influence consumers' Behavioural Intention (BI) to adopt mobile wallet services. The chapter began by summarising the key empirical findings, confirming the significant positive influence of AR constructs namely perceived usefulness, ease of use, compatibility, trialability, and observability on behavioural intention. Conversely, PR factors particularly financial, privacy, and security concerns were shown to negatively impact users' intention to adopt mobile wallets. Additionally, the moderating effects of demographic variables, especially digital literacy, age, and income, were discussed in relation to the core model. In conclusion, this chapter and the study demonstrates that fostering mobile wallet adoption requires more than just technological innovation. It demands a holistic approach that incorporates user readiness, risk mitigation, and inclusivity. The insights generated serve as

a foundational guide for researchers and practitioners aiming to advance digital finance adoption in Malaysia and other emerging economies.

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**Appendix 1:
Questionnaire (For Appendix Inclusion)**

Doctor of Business Administration (DBA) Dissertation

Research Topic

*Determinants of Adoption Readiness, Perceived Risk, and Behavioural Intention Toward
Mobile Wallet Adoption in Malaysia*

Dear Respondent,

Malaysia is actively transitioning toward a high-income, value-driven digital economy. In line with this national agenda, Bank Negara Malaysia (BNM) is taking strategic steps to strengthen the electronic payment ecosystem, including the issuance of digital banking licences aimed at improving financial inclusion for underserved and unserved communities.

Well-established mobile wallet providers such as Touch 'n Go (TNG), GrabPay, Boost, and BigPay are at the forefront of this transformation. Understanding the factors that drive or hinder the adoption of these services is essential to ensuring inclusive financial access and technological progress.

As part of my Doctor of Business Administration (DBA) dissertation, this survey seeks to examine the determinants influencing users' readiness to adopt mobile wallet services, their perceived risks, and their behavioural intention to continue using them. You have been selected to participate because you are currently a mobile wallet user.

The questionnaire will take approximately 10 minutes to complete. Participation is voluntary and anonymous, and no compensation is provided. However, your honest and thoughtful responses will contribute meaningfully to academic research and support future innovations in Malaysia's digital financial landscape.

All information provided will be treated with strict confidentiality and used solely for academic purposes. Should you have any questions or require further clarification, please feel free to contact me directly via the email address provided below.

Thank you for your valuable time and support.

Sincerely,

Haritharan Devanthran

DBA, Universiti Malaysia Sarawak (UNIMAS)

Matrix No: 21040011

Email: [21040011@siswa.unimas.my]

SECTION A: DEMOGRAPHIC INFORMATION

1. What is your gender?

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

2. Are you currently a mobile wallet user (such as: GrabPay, Boost, Alipay, WeChat Pay, Samsung Pay and many more)?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

3. Which mobile wallet(s) do you use? (Select all that apply)

<input type="checkbox"/>	Alipay	<input type="checkbox"/>	Bigpay	<input type="checkbox"/>	Boost	<input type="checkbox"/>	Favepay
<input type="checkbox"/>	Grabpay	<input type="checkbox"/>	Maybank Pay	<input type="checkbox"/>	Razer Pay	<input type="checkbox"/>	Sarawak Pay
<input type="checkbox"/>	Samsung Pay	<input type="checkbox"/>	Touch' n Go	<input type="checkbox"/>	Wechat Pay	<input type="checkbox"/>	None

4. What is your role in using mobile wallets?

<input type="checkbox"/>	Consumer	<input type="checkbox"/>	Merchant	<input type="checkbox"/>	Both
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5. What is your current occupation?

<input type="checkbox"/>	Student	<input type="checkbox"/>	Private Sector Employee	<input type="checkbox"/>	Freelancers or Part-timer
<input type="checkbox"/>	Public Sector Employee	<input type="checkbox"/>	Self-Employed	<input type="checkbox"/>	Unemployed

6. What is the highest level of education you have attained?

<input type="checkbox"/>	High School	<input type="checkbox"/>	Diploma	<input type="checkbox"/>	Undergraduates
<input type="checkbox"/>	Postgraduates	<input type="checkbox"/>	Others:	<input type="checkbox"/>	

7. What is your age group?

<input type="checkbox"/>	15 to 24	<input type="checkbox"/>	25 to 34	<input type="checkbox"/>	35 to 44
<input type="checkbox"/>	45 to 54	<input type="checkbox"/>	55 to 64	<input type="checkbox"/>	Above 65

8. What is your estimated annual income?

<input type="checkbox"/>	RM0 to RM24,000	<input type="checkbox"/>	RM24,000 to RM50,000	<input type="checkbox"/>	RM50,000 to RM70,000
<input type="checkbox"/>	RM70,000 to RM100,000	<input type="checkbox"/>	Above RM100,000		

SECTION B: TECHNOLOGICAL AND PSYCHOLOGICAL FACTORS

(Please indicate your level of agreement with the following statements)

(1 = Strongly Disagree, 5 = Strongly Agree)

1 = Strongly Disagree	2 = Disagree	3 = Neutral	4 = Agree	5 = Strongly Agree
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Perceived usefulness (PU): These items assess the extent to which mobile wallets are beneficial and efficient.

1.	Using mobile wallets improves the speed of my transactions.	1	2	3	4	5
2.	Mobile wallets enhance the efficiency of my daily financial tasks.	1	2	3	4	5
3.	Mobile wallets increase my ability to manage my finances effectively.	1	2	3	4	5
4.	Using mobile wallets benefits my financial savings or returns.	1	2	3	4	5

Perceived ease of use (PEU): These items evaluate how easy and user-friendly mobile wallets are to operate.

5.	Mobile wallet applications are easy to navigate and operate.	1	2	3	4	5
6.	Learning to use mobile wallet services is simple for me.	1	2	3	4	5
7.	It does not require significant effort to complete a transaction using a mobile wallet.	1	2	3	4	5
8.	It is easy for me to access the required devices and internet services to use mobile wallets.	1	2	3	4	5

Social Influence (SI) These items assess the social pressure and influence surrounding mobile wallet use.

9.	People who influence my decisions encourage me to use mobile wallets.	1	2	3	4	5
10.	My close contacts believe I should use mobile wallets.	1	2	3	4	5
11.	I think most people in my social circle use mobile wallets.	1	2	3	4	5
12.	Social media and influencers positively influence my perception of mobile wallets.	1	2	3	4	5

Compatibility (COM) These statements examine how well mobile wallets fit your personal and financial life.

13.	Mobile wallets are compatible with my financial needs.	1	2	3	4	5
14.	Mobile wallets fit well with my daily lifestyle and routines.	1	2	3	4	5
15.	Mobile wallets align with my banking preferences.	1	2	3	4	5
16.	Mobile wallets are in harmony with modern social and cultural expectations.	1	2	3	4	5

Trialability (TRI) These items reflect your experience or intention to experiment with mobile wallet services.

17.	I prefer testing mobile wallets before committing to regular use.	1	2	3	4	5
18.	A trial experience would increase my confidence in mobile wallets.	1	2	3	4	5
19.	The ability to test mobile wallets influences my decision to adopt.	1	2	3	4	5
20.	Trial versions (free downloads, demos) make it easier for me to use mobile wallets.	1	2	3	4	5

Observability (OBS) These items explore how visible and discussable mobile wallet use is within your network.

21.	My peers often talk about mobile wallet usage.	1	2	3	4	5
22.	I have seen mobile wallets being used in other countries.	1	2	3	4	5
23.	I have observed people using mobile wallets in my environment.	1	2	3	4	5
24.	I can easily learn about the advantages of using mobile wallets.	1	2	3	4	5

Adoption Readiness (AR): These items measure your preparedness and motivation to use mobile wallets.

25.	I feel mentally prepared to use mobile wallets for my financial activities.	1	2	3	4	5
26.	I have the confidence to manage mobile wallet applications independently.	1	2	3	4	5
27.	I possess the digital skills necessary to use mobile wallets effectively.	1	2	3	4	5
28.	I am motivated to continue learning more about mobile wallet services.	1	2	3	4	5

Perceived Security Risk (PSR) These items address concerns related to the safety and protection of mobile wallet use.

29.	I fear losing money due to security vulnerabilities in mobile wallets.	1	2	3	4	5
30.	I worry about technical issues (e.g., battery failure, connection loss) during transactions.	1	2	3	4	5
31.	I trust that my financial information is safe when using mobile wallets.	1	2	3	4	5
32.	I believe mobile wallet providers offer adequate protection against fraud.	1	2	3	4	5

Perceived Privacy Risk (PRR) These statements assess your concerns about personal data and privacy.

33.	Mobile wallet providers may share my personal data without consent.	1	2	3	4	5
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34	I worry about my personal data being misused when using mobile wallets.	1	2	3	4	5
35	I feel uncomfortable sharing sensitive data via mobile wallet platforms.	1	2	3	4	5
36	I am concerned about hackers gaining access to my personal information.	1	2	3	4	5

SECTION C: BEHAVIOURAL INTENTION (BI) *These statements evaluate your future intention to adopt or continue using mobile wallets.*

(Please indicate your level of agreement with the following statements)

(1 = Strongly Disagree, 5 = Strongly Agree)

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

37.	I intend to continue using mobile wallets in the future.	1	2	3	4	5
38	I will make an effort to use mobile wallets regularly.	1	2	3	4	5
39	I plan to explore additional features of mobile wallets.	1	2	3	4	5
40	I would recommend mobile wallets to others.	1	2	3	4	5

Thank you for participating in this research. Your responses are valuable in shaping Malaysia's digital finance future.