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**FACTORS AFFECTING THE CONSUMER'S INTENTION TO ADOPT
FINTECH IN ISLAMIC BANKING IN MALAYSIA**

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Abstract

Open Banking leverages consumer data to enhance access to and management of financial services. However, its success depends heavily on consumers' willingness to share data in among the banks and their third-party provider. This study explores the factors influencing consumer acceptance of Open Banking in the context of Islamic banking institutions in Malaysia, where religious and cultural values may shape perceptions of risk and trust differently.

The major findings show that performance expectancy, perceived risk, and trust are significant predictors of consumer acceptance. Performance expectancy which is the consumers' belief in the usefulness of Open Banking was the strongest driver of acceptance. In contrast, perceived risk negatively impacted acceptance, while trust played a key role in encouraging data-sharing behaviour.

A mixed-methods approach was adopted, starting with interviews with industry experts, followed by regression analysis of survey data from 118 respondents, and further validated using Structural Equation Modelling (SEM) via AMOS with a sample of 341 respondents. The data was purposefully collected on Malaysian Islamic banks to ensure that the differing approaches to risk and trust within the Muslim community were appropriately understood.

The study concludes that consumer acceptance of Open Banking is shaped by both the perceived benefits of the service and the confidence that data will be managed securely and ethically. Building trust and addressing risk concerns are therefore essential to optimising data use and enhancing consumer participation in Open Banking within Islamic financial systems.

Lay Summary

This study examines how consumers in Malaysia adopt Open Banking services offered by Islamic banks. Open Banking allows customers to securely share their financial information with different service providers, creating more convenient and personalized banking experiences. The research investigates factors such as trust, perceived risk, ease of use, and practical benefits to understand what influences a consumer's decision to share their personal and financial information in exchange for the financial services. The findings reveal that practical benefits, such as convenience, efficiency, and improved financial management, are the strongest drivers of adoption, while personal attitudes and social influence play a smaller role. This suggests that consumers prioritize tangible advantages over personal opinions or peer pressure when deciding to use Open Banking. By highlighting what matters most to users, this research provides valuable insights for Islamic banks and policymakers to design services that are secure, user-friendly, and aligned with customer needs. Ultimately, it contributes to the growth of digital financial services in Malaysia, supporting more inclusive and efficient banking for consumers.

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CHAPTER ONE

Introduction to the Thesis

1.1 Introduction

The rapid advancement of digital technologies has prompted retail banks to focus on enhancing consumer experience, improving operational efficiency, and effectively adapting to a constantly changing market environment (Alsobai & Aassouli, 2025). These technological advancements have not only revolutionised traditional banking practices but also have spurred the rise of financial technology (FinTech), which incorporates innovative digital solutions into the financial industry. Innovations such as mobile payments, peer-to-peer lending, digital wallets, robo-advisory services, and blockchain applications have transformed the way people access and use financial services. Rather than simply digitalising traditional processes, FinTech has created platform-based financial ecosystems that prioritise interoperability, real-time processing, customisation, and consumer empowerment (Arner, Barberis & Buckley, 2016; Gomber et al., 2018).

Beyond altering banking operations, FinTech innovations have been shown to increase access to financial services and reduce barriers for underserved populations, thereby contributing to broader financial inclusion and economic development (Nazir et al., 2025). According to Demirguc-Kunt (2007), access to financial resources is essential for both economic development and poverty alleviation. Inclusive access to finance enables individuals and businesses to participate productively in economic activities, thereby supporting long-term economic development (BNM, 2017). In this context, technological

innovations have transformed many aspects of daily life, including how financial services are accessed and utilised.

Within these broader FinTech developments, Open Banking has emerged as a critical regulatory and technological innovation that reshapes how financial data are accessed, shared, and utilised (Zachariadis & Ozcan, 2017). Open Banking allows third-party providers to access consumer-authorized financial data through secure application programming interfaces (APIs). Unlike earlier waves of financial technology innovation that focused primarily on digitalising existing banking processes, such as mobile and internet banking, Open Banking enables structured data sharing between financial institutions and external service providers.

In the context of Open Banking, an Application Programming Interface (API) refers to a standardised technical interface that facilitates the secure and consent-based exchange of financial data and services between financial institutions and authorised third-party providers (Lin et al., 2025). These APIs form the foundational infrastructure that allows third parties to access bank account information, initiate payments, and deliver innovative financial services while preserving data security and customer privacy. By facilitating authorised third-party access to consumer data through standardised APIs, Open Banking shifts the financial services ecosystem from vertically integrated banking models toward more open, platform-based structures that encourage competition, innovation, and third-party participation (Zachariadis & Ozcan, 2017; Mohammed, 2025; Chikwarti, 2025).

Hence, Open Banking can therefore be viewed as a natural progression of the FinTech revolution, transforming not only banking operations but also the way consumers interact with financial services and how value is created across the financial ecosystem. The recent

developments in the Open Banking environment also have become increasingly prominent within the financial sector, highlighting its growing importance as a strategic driver of innovation and growth rather than merely a regulatory compliance requirement (Seshika, 2021).

While Open Banking was initially introduced in many jurisdictions as a regulatory initiative aimed at increasing competition and improving consumer data portability, financial institutions and FinTech firms have increasingly recognised its broader strategic value. By enabling secure data sharing through standardised APIs, Open Banking allows banks to develop new digital services, collaborate with FinTech providers, and create platform-based financial ecosystems that extend beyond traditional banking products. This shift encourages innovation in areas such as personalised financial management, integrated payment services, and data-driven financial solutions, thereby transforming Open Banking from a regulatory obligation into a catalyst for digital transformation and competitive advantage within the financial services industry.

The development of APIs also increasingly moving toward a common set of technical standards, referring to agreed-upon technical specifications and protocols that define how APIs are structured, documented, secured, and operated across systems (Open Banking, 2024). These standards facilitate seamless connectivity between financial institutions and third-party providers without requiring separate interfaces for each integration (Zachariadis & Ozcan, 2017).

In addition, the global COVID-19 pandemic highlighted the increasing need for financial resilience, digital literacy, and operational flexibility (Ozili, 2020). This situation prompted financial institutions to accelerate their transition toward digital banking

ecosystems, including Open Banking initiatives, while simultaneously encouraging consumers to engage more actively with digital financial services.

As a result, these converging factors accelerated the adoption of digital financial technologies across both institutions and consumers, thereby highlighting the transformative potential of Open Banking in reshaping financial services and consumer engagement.

1.2 Background of the Study

1.2.1. Open Banking

Open Banking is defined as a system in which personal consumers and small businesses can securely share their financial data with other banks and third-party providers, allowing them to compare products based on their own needs and manage their accounts without being restricted to a single banking provider (Open Banking, 2017). The aim of Open Banking is to spur innovation and make banking transactions more cost-effective, simple, and secure. Banks open their Application Programming Interfaces (APIs) to financial technology providers in order to enable additional features such as financial recommendations and payment automation.

To access banking records, consumers must grant explicit consent to these third-party providers. Such data sharing enables improved service quality and may reduce transaction costs for consumers. For example, a client may use an application to obtain an overview of personal finances by accessing balances and transaction details across multiple bank accounts. Nevertheless, a key concern is whether consumers are sufficiently aware of the benefits and operational mechanisms of the Open Banking ecosystem in order to utilise these services effectively.

This data can be utilised for financial planning, payment facilitation, and financial recommendations, thereby enhancing consumers' ability to compare fees, evaluate the performance of financial products and services, and simulate potential experiences with alternative providers. Open Banking also reduces the need for consumers to manually submit financial records or income statements when assessing affordability, as expenditure patterns can be automatically analysed through transaction data. Consequently, the quantification of spending behaviour becomes easier because the system identifies actual expenses rather than relying solely on reported income.

In the Open Banking environment, the interaction between banks and consumers is evolving due to the presence of third-party providers. Banks often outsource expertise to develop their APIs, which in turn exposes certain consumer data to authorised external providers. However, a critical determinant of the success of any technological innovation is the level of consumer acceptance and usage, as the adoption of new technologies ultimately depends on users' willingness to integrate them into their daily activities (Davis, 1989; Venkatesh et al., 2003).

Due to these developments in financial technology, the traditional dominance of financial institutions is increasingly challenged by FinTech firms. Banks are now compelled to undertake strategic transformation in order to remain competitive. However, relatively few studies have examined the opportunities and challenges posed by the Open Banking ecosystem (Gozman, Hedman & Sylvest, 2018; Romanova et al., 2018; Niemelä, 2019; Ali & Muhd Zaki Zaini, 2019).

According to Romanova et al. (2018), four primary areas of concern associated with the emergence of Open Banking include cost structures, service delivery channels, privacy

and security risks, and operational efficiency. In their study, employees from FinTech companies across Europe were surveyed through an online questionnaire to examine these issues.

Nevertheless, several key market forces drive financial institutions to adopt Open Banking, including technological advancement, competitive pricing, and innovation (Romanova et al., 2018). The financial services market is being disrupted by digital transformation, where the volume and strategic importance of data have significantly increased. Advancements in API technologies have also facilitated faster and more efficient data sharing between institutions.

The changes in consumer behaviour, particularly the growing preference for digital, mobile, and on-demand financial services, have contributed to the emergence of more flexible and technologically advanced financial service providers, thereby placing traditional banks under increasing competitive pressure (OECD, 2020). Consumers are now more influential than ever due to the widespread adoption of smartphones and social technologies, which enable instant access to financial information, easier comparison of services, and rapid sharing of consumer experiences. These developments significantly influence market reputation and shape firms' competitive strategies (Dwivedi et al., 2021).

Despite the growing competitive pressure from FinTech firms, several experts argue that banks continue to possess significant strategic advantages. These include strong consumer trust built through their long-standing role in safeguarding deposits and operating under strict regulatory oversight (Dhar & Stein, 2017), the richness of client data accumulated over time (Brodsky & Oakes, 2017), and extensive experience in financial markets (Zalan & Toufaily, 2017). Furthermore, banks possess advanced capabilities in cybersecurity, personal

data protection, and risk management, which represent critical competitive advantages within the financial services sector (Bratasanu, 2017).

Although this transition presents numerous opportunities for banks, it also raises important challenges regarding how technology can be employed while maintaining consumer trust. Historically, banks have been the primary custodians of consumer financial data, but regulatory developments increasingly require them to share data with authorised third-party providers. While banks already use APIs for data exchange within their internal systems and with trusted partners, the use of open APIs with external third parties represents a relatively new challenge (Fiedler et al., 2022; Dezem et al., 2024).

Consequently, many banks outsource the development of Open Banking applications to specialised software providers, primarily due to the high cost and lack of in-house expertise required to develop secure API infrastructures (Basel Committee on Banking Supervision, 2018). These external entities are commonly referred to as Third-Party Providers (TPPs).

There are two main categories of Third-Party Providers, namely Payment Initiation Service Providers (PISPs) and Account Information Service Providers (AISPs). PISPs enable consumers to initiate online payments directly from their bank accounts without entering debit or credit card information. Such payments can only be executed if the bank administrator has granted the necessary permissions within the application, and all existing banking security measures, including authentication procedures, remain in effect. Within banking systems, this function is typically referred to as “Third-Party Provider Payments”.

On the other hand, Account Information Service Providers (AISPs) are service providers that obtain authorised access to specified account information, such as balances and transaction histories, for a defined period of time. AISPs can aggregate data from multiple bank accounts to provide consumers with a consolidated financial overview. Similar to PISPs, the sharing of account information occurs only after the consumer has granted explicit consent and the necessary permissions have been configured by the bank administrator. This arrangement is commonly referred to as “Third-Party Provider Consents”.

In summary, Open Banking represents a significant development in the financial services sector by enabling secure data sharing between banks and authorised third-party providers through APIs. While this innovation has the potential to enhance financial services, increase competition, and improve consumer experience, it also raises important concerns related to data security, privacy, and governance. As a result, the successful implementation of Open Banking depends not only on technological advancement but also on the presence of appropriate regulatory frameworks that ensure standardisation, consumer protection, and trust. Therefore, the next section discusses the regulatory frameworks governing Open Banking and the different approaches adopted by countries in implementing it.

1.2.2. Regulatory Aspect in Open Banking

As different institutions utilise different API providers, gaps may emerge between the technical standards used across systems. The lack of API standardisation makes it difficult for providers to interact seamlessly with one another. Therefore, clear regulatory guidelines and technical standards are required to ensure interoperability and effective API management.

In this context, the regulatory developments associated with Open Banking represent one of the most significant transformations in the banking sector. and comprehensive regulatory framework. Simultaneously, regulators in several major economies are promoting broader adoption of Open Banking through industry-driven standards and regulatory frameworks. Among these, the United Kingdom is often highlighted as a pioneering example, owing to its early and comprehensive regulatory framework.

In 2016, the UK's Competition and Markets Authority (CMA) published a report concluding that large incumbent banks dominated the retail banking market and that greater competition would benefit consumers and small businesses. To address this issue, the CMA and the UK government mandated nine of the largest banks (commonly known as the CMA9) to implement common Open Banking standards, including standardised APIs that allow customers to securely share financial data and initiate transactions with licensed third-party providers (Open Banking, 2026).

An implementation body known as Open Banking Limited (previously the Open Banking Implementation Entity) was subsequently established to develop and maintain the technical, security, and governance frameworks supporting Open Banking in the UK. These frameworks include API specifications, security profiles, and trust services, which collectively enable secure and scalable data sharing across the Open Banking ecosystem (Open Banking, 2026).

The UK's structured and standards-led regulatory framework successfully translated regulatory objectives into practical market adoption and ecosystem development. Unlike many jurisdictions that introduced broad legal provisions for third-party data access, such as

under the European Union's PSD2 directive, the UK framework combined regulatory mandates with unified technical standards and a central implementation authority.

This standards-driven approach has been widely credited with reducing technical fragmentation, accelerating adoption among Third-Party Providers (TPPs), and fostering a vibrant Open Banking ecosystem. Regulation, when carefully designed and implemented, can therefore act as a catalyst for innovation, economic development, and competition (Romanova et al., 2018).

Globally, three main regulatory approaches to Open Banking can be identified: mandatory, supportive, and neutral frameworks. In the European Union, adoption is mandatory through regulatory enforcement, particularly through the introduction of the Second Payment Services Directive (PSD2). PSD2 played a crucial role in accelerating the development of Open Banking by requiring banks to provide authorised third-party access to payment accounts. Prior to this directive, payment services were largely outside the scope of EU financial regulation (Brener, 2019).

Several countries have since begun to adopt Open Banking initiatives inspired by the European and UK models. These initiatives often include regulations that allow financial applications to access consumer financial data and enable credit providers to verify account information for credit assessments, subject to consumer consent. Ultimately, these developments aim to support the creation of an interconnected global Open Banking ecosystem (Seshika, 2021).

However, the pace of regulatory development varies significantly across countries, as each jurisdiction establishes standards and guidelines tailored to its own financial system and

regulatory environment. Consequently, the goal of achieving a fully integrated cross-border Open Banking ecosystem remains a long-term aspiration rather than an immediate reality.

In contrast to the UK and EU, which implemented regulator-mandated frameworks with standardised APIs and governance structures, the United States has adopted a largely market-driven approach. Open Banking in the US has historically evolved through commercial agreements between banks, FinTech firms, and data aggregators, with consumer consent serving as the primary mechanism for data access.

There is no single national regulatory body equivalent to the UK's CMA or Open Banking Limited. Instead, regulatory oversight is distributed across several legal instruments and agencies, including Section 1033 of the Dodd-Frank Act. More recently, the Consumer Financial Protection Bureau (CFPB) has begun initiatives aimed at formalising consumer financial data-sharing standards across institutions (Deloitte, 2024).

While this industry-led approach has encouraged innovation and competition, it remains less coordinated than the UK's standards-based regulatory model. As a result, although the United States represents a significant Open Banking market, it does not yet constitute a world-leading example of structured regulatory implementation comparable to the UK framework.

In summary, Open Banking regulations differ across countries, from standards-led, mandatory frameworks in the UK and EU to market-driven approaches in the United States. Structured regulation has proven effective in promoting interoperability, consumer trust, and ecosystem growth, yet regulatory progress depends on local market and governance contexts. These international experiences offer valuable lessons for emerging markets such

as Malaysia, where Open Banking development must balance global best practices with domestic regulatory, technological, and market conditions. The next section examines how Malaysia has implemented Open Banking initiatives, illustrating the interplay between regulatory guidance and market-driven innovation.

1.2.3. Open Banking in Malaysia

The introduction of the EU's Payment Services Directive 2 (PSD2) prompted the development of Open Banking frameworks in other countries, including Malaysia (Accenture, 2018; SEACEN, 2022). The framework was proposed to facilitate financial institutions, particularly banks, in their Open Banking initiatives. The evolution of Open Banking in Malaysia can be viewed from two perspectives which include regulatory initiatives and business or market initiatives.

From a regulatory standpoint, the Malaysian Central Bank launched the FinTech Enable Group in June 2016, a regulatory effort aimed at fostering innovation in the financial services sector. This was followed by the implementation of the FinTech Regulatory Sandbox Framework in October 2016, which specifies eligibility criteria, technical specifications, and guidelines for linking to Application Programming Interfaces (APIs). In March 2018, the Central Bank established the Open API Implementation Group to guide banks and FinTech stakeholders in implementing standardized API infrastructure. Subsequently, in January 2019, the Policy Document on Publishing Open Data Using APIs was introduced, outlining recommendations for financial institutions regarding the implementation and dissemination of open data via APIs. The Open Data API Specifications, developed by the Open API Implementation Group, further encourage adoption of standardized API practices among financial institutions.

On the business or market side, Malaysia's Open Banking timeline began in May 2015 with the launch of a FinTech incubation program by Commerce International Merchant Bankers Berhad (CIMB), one of Malaysia's leading banks offering both Islamic and conventional banking services. The program supports startups in developing API systems and was followed by the rollout of Point of Sale (POS) transactions and payment services, linking merchants to the bank's payment network. FinTech companies and developers can also access publicly available APIs through global developer portals managed by international banks, including Standard Chartered and Citibank.

Publicly accessible APIs are APIs provided via bank-hosted developer portals, allowing external parties to access certain banking functionalities and technical documentation for building and testing financial applications (Basel Committee for Banking Supervision, 2018). Malaysian banks such as Maybank and Hong Leong Bank offer a mix of publicly accessible APIs, for example, Maybank's sandbox and consumer-facing digital services. These services enable end users to access financial functionalities such as mobile banking, payment initiation, personal financial management, and account aggregation through structured collaborations built on the banks' APIs.

Overall, the development of Open Banking in Malaysia highlights the coordinated efforts between regulators and financial institutions to foster innovation and improve financial services through APIs. While these initiatives provide a foundation for digital banking adoption across the country, the uptake and adaptation of Open Banking in the Islamic banking sector present unique considerations. The following section examines how Islamic banking institutions in Malaysia engage with Open Banking, exploring the regulatory, ethical, and consumer-related factors that shape its adoption.

1.2.4. Islamic Banking in Malaysia

Banking systems can be broadly categorized into Islamic and conventional frameworks, distinguished primarily by their operational principles and regulatory foundations. Islamic banking refers to financial institutions and activities that operate in strict accordance with Shariah principles, as formally recognized and regulated by national authorities (Wilson, 2008). These principles include the prohibition of interest (riba), the avoidance of excessive uncertainty (gharar), and adherence to profit-and-loss sharing arrangements.

From a regulatory perspective, Islamic banks are defined as institutions licensed to conduct banking business based on Shariah-compliant contracts and governance structures, including Shariah advisory boards and centralized oversight by the relevant financial authority, such as the Central Bank of Malaysia under the Islamic Financial Services Act 2013. Regulatory frameworks ensure that Islamic banks maintain both financial stability and religious compliance, standardizing product offerings, risk management, and reporting obligations while also enabling innovation in financial services (BNM, 2013; Iqbal & Mirakhor, 2011).

In contrast, conventional banking or western banking encompasses traditional financial institutions that operate under secular commercial and regulatory frameworks. Conventional banks accept deposits, provide loans, and offer financial products primarily on the basis of interest-based transactions, without Shariah constraints. These institutions are governed by national banking regulations and prudential standards, focusing on financial intermediation, risk management, and profitability rather than religious compliance. Unlike Islamic banks, conventional banks do not engage in profit-and-loss sharing arrangements, nor

are they required to obtain Shariah approvals for their operations or products (Molyneux & Thornton, 1992).

The distinction between these two systems is therefore both operational and regulatory. While conventional banks are structured around commercial and legal norms, Islamic banks integrate religious, ethical, and social considerations into their business model, all under formalized governance and regulatory oversight. Understanding these distinctions is critical for analysing consumer behaviour, technology adoption, and financial innovation within Islamic banking contexts, particularly in markets such as Malaysia where both systems coexist under a dual banking framework.

Malaysia's dual banking environment thus presents a distinctive context for studying Open Banking, especially within Islamic financial institutions. In Malaysia, Islamic and conventional banking operate side by side under the same regulatory framework, governed by the Central Bank of Malaysia. This dual system allows Islamic banks to offer Shariah-compliant financial products while adhering to national banking regulations, creating a unique environment for innovation and digital transformation. In contrast, Islamic countries such as Saudi Arabia and the United Arab Emirates have banking systems predominantly dominated by either Islamic or conventional banks, limiting direct comparisons between dual systems and reducing the interplay between Shariah principles and regulatory innovations such as Open Banking.

Open Banking in Islamic banking differs from conventional banking primarily due to Shariah compliance requirements. Islamic banks must ensure that all products and services avoid *riba* (interest), *gharar* (excessive uncertainty), and *maysir* (speculation), while adhering to principles of transparency, ethical conduct, and risk-sharing. These requirements influence

the design of APIs, data-sharing protocols, and the types of services offered to consumers. For example, while a conventional bank may offer algorithmic lending or interest-based savings linked via Open Banking APIs, an Islamic bank must ensure equivalent services are structured according to profit-and-loss sharing or fee-based models compliant with Shariah principles.

Consumer perceptions in the Islamic banking context also differ from conventional banking. Trust is tied not only to data security and service quality but also to the ethical and religious integrity of the provider. Consumers expect Open Banking platforms in Islamic banks to respect both technical standards for security and moral standards in compliance with Shariah law. This dual expectation adds complexity to adoption decisions and differentiates the determinants of acceptance from those in conventional banking contexts, where ethical compliance may not be as central to consumer decision-making.

Table 1.2.4: Comparative Characteristics of Islamic and Conventional Banking Systems

Aspect	Islamic Banking	Western (Conventional) Banking
Underlying Principles	Shariah-compliant financial system that prohibits <i>riba</i> (interest), <i>gharar</i> (excessive uncertainty), and <i>maysir</i> (gambling), while emphasising ethical investment and profit-and-loss sharing between financial institutions and customers (Iqbal & Mirakhor, 2011).	Financial system primarily based on interest-bearing lending and investment, operating under commercial and financial regulations without religious restrictions (Mishkin, 2019).
Products and Services	Asset-backed or equity-based financing contracts such as <i>Murabaha</i> (cost-plus financing), <i>Ijarah</i> (leasing), and <i>Musharakah</i> (partnership financing), while deposit accounts often follow profit-sharing arrangements such as <i>Mudarabah</i> (Iqbal & Mirakhor, 2011).	Financial services typically include loans, savings, and investment accounts based on interest mechanisms, as well as bonds, derivatives, and other financial instruments designed to maximise returns (Mishkin, 2019).
Risk Management	Risk-sharing arrangements are embedded in financing contracts, requiring both the bank and the customer to share financial risks and returns in accordance with Shariah principles (Iqbal & Mirakhor, 2011).	Risk is typically transferred to borrowers through debt-based contracts, while financial institutions manage risk primarily through collateral, interest rates, and regulatory compliance (Mishkin, 2019).

Aspect	Islamic Banking	Western (Conventional) Banking
Consumer Considerations	Consumer trust is influenced by Shariah compliance, ethical conduct, and religious values, alongside service quality and financial security (Dusuki & Abdullah, 2007).	Consumer trust is generally shaped by financial stability, institutional reputation, service efficiency, and technological security rather than religious considerations (Mishkin, 2019).
Regulatory Framework	Islamic banks operate within a dual regulatory framework, requiring compliance with both financial regulations and Shariah governance structures supervised by the central bank (Bank Negara Malaysia, 2019; Islamic Financial Services Board, 2023).	Conventional banks are regulated by financial authorities and central banks to ensure financial stability, consumer protection, and market efficiency (Mishkin, 2019).
Open Banking Implications	Open Banking APIs and third-party integrations must ensure that financial services remain Shariah-compliant, meaning adoption may depend on both technological trust and confidence in Shariah governance (Sadek et al., 2025).	Open Banking initiatives focus primarily on interoperability, data sharing, and digital financial innovation, with adoption influenced by technological trust, perceived risk, and service convenience (Zachariadis & Ozcan, 2017).
Innovation Flexibility	Innovation is supported through initiatives such as FinTech regulatory sandboxes, but financial products must remain consistent with Shariah principles (Bank Negara Malaysia, 2020).	Conventional financial institutions generally have greater flexibility in designing innovative FinTech services due to fewer ethical or religious constraints (Arner et al., 2017).

Table 1.2.4 presents a comparison between Islamic banking and conventional banking across several key dimensions, including underlying principles, financial products and services, risk management practices, consumer considerations, regulatory frameworks, Open Banking implications, and innovation flexibility.

This comparison highlights that Islamic banking emphasises asset-backed financing, risk-sharing arrangements, and Shariah governance, whereas conventional banking focuses on interest-based lending and profit maximisation. These differences have significant implications for Open Banking implementation. In Islamic banking, the integration of APIs and third-party services must comply with Shariah principles and maintain consumer trust in

ethical practices, while conventional banking primarily emphasises technological interoperability, service innovation, and convenience.

Malaysia, in particular, provides a compelling context for examining consumer acceptance of Open Banking within Islamic banking institutions due to its distinctive institutional and regulatory arrangements (Indrawan & Rahman, 2020). Unlike in many jurisdictions where Islamic banking operates primarily as a niche or supplementary system, Malaysia has developed a dual banking model in which Islamic and conventional banks operate concurrently under a unified regulatory framework (Wilson, 2008). This arrangement facilitates the coexistence of Islamic and conventional financial institutions while ensuring rigorous adherence to Shariah principles through mechanisms such as Shariah advisory boards and centralized oversight by Bank Negara Malaysia (BNM, 2019).

The Islamic Financial Services Act 2013 further institutionalises standardised Shariah governance and promotes product diversification, underpinning Malaysia's emergence as a global hub for Islamic finance (Kunhibava, 2012). Complementing this regulatory infrastructure, Malaysia has implemented forward-looking policies to support financial technology and digital banking, including FinTech regulatory sandboxes and digital banking frameworks, thereby providing a conducive environment for innovations such as Open Banking (BNM, 2020).

In contrast, Islamic banking in Middle Eastern countries, particularly within the Gulf Cooperation Council (GCC) states including Saudi Arabia, the United Arab Emirates, Bahrain, and Kuwait is characterized by substantial market share and institutional scale. GCC Islamic banks often benefit from large asset bases and sovereign support, contributing to robust profitability and strong global positioning among top Islamic financial institutions.

Nevertheless, the regulatory and governance landscape is less homogeneous, with varying Shariah interpretations and decentralized oversight frameworks shaping product offerings and institutional practices (Saharudin & Bakar, 2024; Iqbal & Mirakhor, 2011). Compared with Malaysia's centralized and standardised governance, Saudi Arabia exemplifies a decentralized approach, which affords institutional flexibility but results in lower regulatory uniformity (Saharudin & Bakar, 2024).

Empirical analyses further highlight these distinctions. Malaysia exhibits higher proportional adoption of Islamic financial products relative to total banking activity, whereas Saudi Arabia leads in absolute Islamic finance asset values, reflecting the relative scale and structural characteristics of its banking sector (Saharudin & Bakar, 2023). Studies also suggest that the impact of Islamic banking on economic growth varies across contexts; in Malaysia and similar East Asian economies, its influence on short-term financial intermediation and economic outcomes appears more pronounced than in GCC countries, highlighting contextual differences in institutional and market structures (Yusof & Bahlous, 2013).

Beyond market and regulatory distinctions, Malaysia has established itself as a knowledge leader in Islamic finance. A bibliometric analysis by Tijjani et al. (2020) demonstrates that Malaysia contributes disproportionately to scholarly research in Islamic finance, attributable to its supportive academic and research environment. This dual role as both a market innovator and research hub reinforces the country's strategic significance in the global Islamic finance landscape.

Consequently, Malaysia's combination of centralized regulation, institutionalised Shariah oversight, and product innovation provides a highly suitable context for investigating consumer acceptance of Open Banking in Islamic banking. In contrast, Middle Eastern Islamic

banking systems exhibit greater heterogeneity in governance, jurisprudential interpretation, and institutional integration, highlighting critical contextual differences that shape consumer perceptions of risk, trust, and adoption behaviours.

Considering these factors, Malaysia's dual banking system, supportive regulatory environment, and integration of Shariah principles make it a unique context for examining Open Banking adoption. Studying Islamic banks in Malaysia offers insights into how trust, perceived risk, and performance expectations operate in a setting where both technical and ethical considerations shape consumer behaviour. This insight provides a richer understanding than studies limited to conventional or exclusively Islamic banking systems in other countries.

1.3 Problem Statement

Technological innovation is transforming the global financial system, particularly within the Islamic Financial Services Industry. According to the Islamic Financial Stability Report (2025), the Islamic FinTech sector, estimated at USD 138 billion in 2024 and expected to reach USD 300 billion by 2027, is revolutionizing service delivery and offering new intermediation channels beyond traditional banking. This transformation includes an increasing reliance on third-party providers. While these advances promote growth, diversification, and efficiency, they also introduce new risks and structural changes that require regulatory and supervisory oversight (IFSB, 2025).

The growing presence of FinTech companies has increasingly challenged the relevance of traditional banking institutions, compelling banks to adapt and innovate to ensure long-term sustainability. In his opening remarks at the Islamic FinTech Dialogue 2017, a forum convened in Kuala Lumpur, Malaysia, to discuss the intersection of financial technology and

Islamic finance, Marzunisham Omar, Assistant Governor of Bank Negara Malaysia (BNM), emphasized that the growth trajectory of Islamic finance necessitates embracing the FinTech wave to achieve inclusive development and maintain industry competitiveness (BNM, 2017). Ghani (2016) highlighted that Islamic financial institutions must leverage FinTech advantages to reinforce their role as trusted financial intermediaries. Similarly, Nienhaus (2017, as cited in Djafri, 2017) argued that FinTech products and structures should not be viewed as replacements for Islamic finance but rather as innovative developments emerging within its framework.

Regulatory developments have also played a critical role in facilitating FinTech integration within the banking industry. In this context, the introduction of the European Union's Payment Services Directive 2 (PSD2) has served as a catalyst for Malaysia's framework, which enables financial institutions, particularly banks, to share specific consumer data with third-party providers to facilitate account-based transactions via Open Application Programming Interfaces (Open APIs), equivalent to Open Banking. The development of Open Banking in Malaysia can broadly be categorized into two dimensions: regulatory initiatives, which include policies and frameworks governing data sharing and financial innovation, and market-driven developments, which encompass the adoption of new technologies, digital platforms, and innovative financial services by both institutions and consumers (Alam, 2021).

According to Bank Negara Malaysia (BNM, 2019) in the Policy Document on Publishing Open Data Using API, the provision of open data is guided by several objectives. These include enhancing small and medium-sized enterprises' (SMEs) access to financing products and services; promoting comparability of motor insurance and takaful products in line with

market liberalization; supporting FinTech development to enable consumers to evaluate a wide range of financial offerings suited to their needs; improving user experience and expanding consumer choice; and leveraging technology for the provision, distribution, and consumption of financial services.

Despite these regulatory and market developments, adoption remains limited. Celine and Iqbal (2017) observed that while most financial institutions in Malaysia have incorporated Open API deployment into their strategic plans, adoption levels are constrained, primarily due to concerns regarding security and the reliability of third-party providers. Similarly, Miskam and Eksan (2018) highlighted that rapid advancements in FinTech are reshaping the financial services landscape, presenting both opportunities and challenges across areas such as artificial intelligence, cryptocurrency, and Open Banking. Complementing this view, Romanova et al. (2018), through a survey of employees in European FinTech firms, identified four primary concerns regarding Open Banking: cost, service channels, privacy and security risks, and the overall quality and efficiency of services.

Following the need for industry adaptation, Khan et al. (2023) emphasized that banking institutions must embrace the Open Banking ecosystem to prevent institutional obsolescence. Nevertheless, despite the emergence of FinTech in the early 2000s, digital adoption in the Islamic financial sector has been relatively slow (Krishnakumar, 2018). Supporting this, Bakar and Izma (2018) noted that although Islamic financial institutions have begun leveraging FinTech to enhance service delivery, however, its application particularly in relation to Open Banking remains in its infancy. Likewise, Ali and Zaini (2019) acknowledged that FinTech developments can influence both conventional and Islamic financial sectors, either positively or negatively. However, their study revealed that Islamic finance

stakeholders have generally responded more cautiously compared to conventional counterparts.

Despite these contributions, recent studies integrating FinTech and Islamic finance (Lacasse et al., 2018; Todorof, 2018; Laldin & Furqani, 2019; Biancone et al., 2019) have not examined the topic comprehensively, nor have they employed primary data to evaluate consumer acceptance of Open Banking within Islamic banking. Much of this literature remains fragmented, focusing on specific FinTech segments such as crowdfunding or blockchain, reflecting the nascent stage of FinTech adoption in Islamic finance, particularly within Malaysia.

A fundamental aspect of the Open Banking environment is data ownership. Banking data belongs to the consumer, and the right to control its use rests solely with them. Therefore, to utilize Open Banking services, consumers must grant permission for banks to share their data with third-party providers, enabling its display in Open Banking applications. According to Stiefmueller (2020), consumers feel more empowered to interact with banking or financial services if an open API standard is implemented. Open Banking enables data portability, allowing personal data such as account details and payment records to be shared across institutions to seek better offers or services.

Moreover, Open Banking provides access to traditionally underserved populations, including the unbanked (Lynn, Rosati, & Cummins, 2020). Sharing client account data can enable innovations through internal bank analytics or external FinTech companies, creating opportunities for individuals previously denied credit due to poor histories or lack of accounts. However, a lack of awareness regarding Open Banking services may limit adoption. Some

consumers may perceive these applications as merely part of credit application processes, particularly those outside mainstream banking.

Allowing borrowers to choose whether to share data with third parties, particularly alternative FinTech lenders, has significant implications for credit market competitiveness and welfare (He, Huang, & Zhou, 2020). Data is now a critical asset, underpinning financial products and services, stimulating competition, and fostering sector growth. It facilitates risk assessment, financial management, market forecasting, and portfolio optimization across consumer banking, payments, trading, wealth management, investment banking, and insurance. Therefore, access to and exchange of data provides substantial benefits to industry players and alters the competitive landscape.

FinTech disruptions are generally viewed positively by consumers because they offer personalized options and reduce the cost of financial services (Abdullah, 2016). Nonetheless, findings from an online survey conducted by Mobey Forum and Aite Group, involving over 1,000 consumers across five European countries, indicated that only about one-third of respondents expressed strong interest in Open Banking services (Mobey Forum & Aite Group, 2019). The study reviewed consumer interest in offerings such as Account Information, Pay by Bank, Product Comparison, Purchase Financing, and Identity Check, while also identifying potential adoption challenges.

Most consumers prefer their primary bank to serve as the main provider of Open Banking services and are reluctant to share account data with other banks or third-party providers, primarily due to security and privacy concerns (Mobey Forum & Aite Group, 2019). Nevertheless, Open Banking offers potential benefits, including improved financial management tools, greater innovation, enhanced competitiveness, and broader access to

financial services. As with any technological advancement or emerging market development, these opportunities are accompanied by inherent risks.

1.3.1. Risk in Open Banking

Extensive research has examined the relationship between perceived risk and behavioural intention (Featherman & Pavlou, 2003; Lee, 2009; Mingxing et al., 2014; Thakur & Srivastava, 2014; Kerviler et al., 2016; Lafraxo et al., 2018; Cokins et al., 2020; Malik & Annuar, 2021). A substantial body of literature reports a negative relationship between perceived risk and behavioural intention, indicating that higher levels of perceived risk tend to reduce users' willingness to adopt financial technologies (Martins et al., 2014; Thakur & Srivastava, 2014; Kerviler et al., 2016; Shuhidan et al., 2017).

For instance, Martins et al. (2014) extended the Unified Theory of Acceptance and Use of Technology (UTAUT) model proposed by Venkatesh et al. (2003) by incorporating perceived risk to explain behavioural intention towards internet banking in Portugal. Their findings revealed that perceived risk negatively influences users' behavioural intention to adopt internet banking services. Moreover, the study identified privacy, financial, time, and performance risks as the primary dimensions of perceived risk, while social and psychological risks demonstrated less consistent relationships with behavioural intention.

From a practical perspective, service providers must implement robust legal and technological frameworks, including secure credential systems and continual enhancements to control mechanisms, to safeguard confidential information, particularly in the context of mobile payment services (Thakur & Srivastava, 2014). Similarly, Shuhidan et al. (2017) examined five dimensions of perceived risk including performance risk, security or privacy

risk, time risk, social risk, and financial risk to investigate young adults' perceptions of mobile banking in Malaysia. Their findings indicated that performance risk and security risk were the most influential factors affecting adoption intention. This study employed a quantitative approach, surveying 384 smartphone users aged below 35 years.

In contrast, Lafraxo et al. (2018) reported no significant relationship between perceived risk and user acceptance of mobile banking services in Morocco, despite incorporating perceived risk as a key explanatory variable. Likewise, Malik and Annuar (2021) found that perceived risk had a statistically insignificant effect on e-wallet usage intention among Malaysian youths, although the authors noted that the findings may not be generalisable to older populations, who may perceive technological risks differently.

Interestingly, research on technology adoption in online accounting platforms identified a positive relationship between perceived risk and usage intention (Cokins et al., 2020). This study, which surveyed 401 companies in Romania, suggested that perceived risk may also function as a motivating factor in certain organisational contexts, potentially reinforcing firms' intentions to adopt information technologies when risk is associated with strategic or competitive considerations.

In summary, perceived risk plays a critical role in shaping consumers' intention to adopt Open Banking services, influencing decisions through concerns over privacy, financial loss, performance, and security. While some studies report a negative effect, others suggest that risk may, in certain contexts, motivate adoption. Given the inherent uncertainties associated with sharing financial data and engaging with third-party providers, trust emerges as a pivotal factor in mitigating these perceived risks.

1.3.2. Trust in Open Banking

The financial industry is frequently referred to as a trust business. A high level of trust in banks is a key predictor of the financial system's efficiency. Consumers are one of the most precious assets for banks in modern competitive banking environment. In various research, a positive relationship between trust and satisfaction in the financial sector has been empirically proven (McKnight et al., 2002; Pavlou, 2003; Wu & Chen, 2005; Ha & Stoel, 2009; Posey et al., 2010; Mangin et al., 2014; Palaez et al., 2019; Hansen et al., 2018; Stewart & Jurjens, 2018). Consumers feel that their money is safe with a bank because they trust that their money will be held and that they will be free to withdraw it at any moment. Because trust is central to the banking relationship, financial institutions are held to stricter compliance and control standards than institutions in other industries to maintain systemic stability, protect depositors and uphold confidence in the financial system (Basaran & Bagheri, 2020).

Nevertheless, the financial sector continues to face challenges in maintaining trust, according to the Edelman Trust Barometer (2019), it is perceived as the least trusted sector on a global scale. Lewan (2018) concluded that trust is essential in financial industry especially in FinTech and it depends relatively on the social influences of an individual. The significant of vulnerability of the Open Banking setting is the central situational feature of trust. Hence, Open Banking adoption is predicted to be affected by the trust that individual either on the system itself or the institutions.

Besides that, as consumer behaviours and expectations change, the question of whether consumers trust banks with their data as well as their money becomes increasingly essential. Younger people do not trust traditional banks as much as they do towards the emerging FinTech start-ups (Accenture, 2019). In Open Banking situation, the capacity of

clients to trust their bank to preserve both their personal information and their money is the most important driver of banking consumer loyalty. Consumers want to know that their bank is reliable. Thus, the consent of the consumer to share their data in Open Banking environment is depends on the level of trust in the security system of the bank and its ability to protect their data. As a result, data security is a critical pillar for establishing confidence with consumers and retaining their loyalty (Bylykbashi, Fitamant, & Lee, 2021).

Mayer et al. (1995) provide a widely cited definition of trust, describing it as “willingness to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (p. 712). Trust is conceptualized as a multifaceted construct, with various dimensions influencing consumer behaviour and shaping the processes through which trust is formed (McKnight et al., 2002). Giddens (1990) distinguishes between interpersonal and system trust, framing them in broader historical and evolutionary contexts, while Mayer (2008) notes that financial markets have historically emphasized interpersonal trust more than institutional trust.

Extensive research has examined the role of trust within e-commerce, highlighting its multidimensional nature and the distinct ways in which its facets influence user behaviour (Grabner-Krauter & Kaluscha, 2003). Early studies differentiated between institutional and interpersonal trust. Giddens (1990) argued that institutional trust, or trust in expert systems, tends to be more significant than interpersonal trust. However, his framework did not fully account for the influence of digital technologies on the development and organization of abstract trust systems. Luhmann (1979) conceptualized system trust as confidence in the functioning of a system itself rather than in specific individuals. Complementing this,

McKnight et al. (2002) defined institution-based trust as a sociological dimension, reflecting an individual's perception of the institutional environment.

Building on these conceptualizations, a lack of trust remains one of the reasons consumers hesitate to engage in online commercial transactions (Pavlou, 2003; Wu & Chen, 2005). Perceptions of functional attributes in digital transactions, particularly safety and security, can shape both trusting beliefs and trusting intentions toward a given service (Keen et al., 1999). In Open Banking, institutional trust is a crucial determinant of service adoption. McKnight et al. (2002) demonstrated that higher institutional trust increases consumers' willingness to share personal information, complete transactions, and rely on online service providers.

Trust is frequently examined alongside perceived risk, with researchers debating which factor precedes the other and whether these variables serve as mediators or intervening factors influencing behavioural intention (Pelaez et al., 2019). In this context, Hong and Cha (2013) explored the mediating role of trust in the relationship between perceived risk and purchase intention within an online environment. Their findings confirmed that trust mediates the effect of performance risk on purchase intention. Consequently, efforts to mitigate risk by merchants are essential for enhancing consumer trust, thereby increasing purchase intention.

Mangin et al. (2014) found that trust positively influence the relationship between attitude and intention to use online banking. Their study, which adopted an extended version of the Technology Acceptance Model (TAM), examined consumer acceptance of online banking in Canada. However, the moderating effect of trust was observed only in the relationship between attitude and intention to use the service. Similarly, Hansen et al. (2018)

argued that higher levels of trust in social technology activities increase consumers' likelihood of engaging in transactional use. This aligns with earlier findings by Ha and Stoel (2009) and Posey et al. (2010), who reported that trust significantly enhances online self-disclosure.

In relation, consumer trust significantly influences the adoption of financial technology (FinTech) as demonstrated by Stewart and Jurjens (2018). Their study revealed that higher levels of trust reduce perceived risk in FinTech adoption in the context of Germans. Similarly, Usman et al. (2020) examined the moderating role of trust in Indonesia, focusing on the use of financial technology within the context of Islamic philanthropy. The findings indicated that individuals with stronger trust exhibit a more positive attitude toward adopting financial technology, even when their perceived ease of use is low. These insights suggest that trust in both financial institutions and the underlying technology is critical in predicting the acceptance of Open Banking.

In Open Banking, changes that grant third-party access to customer data create new challenges for banks (Zijlmans, 2017). It may limit banks' capacity to leverage current account relationships as entry points for cross-selling additional products and services, while simultaneously enabling consumers to select providers that deliver superior quality and service (Temenos, n.d.). Since Open Banking involves the sharing of sensitive consumer information, establishing trust in the ability of providers to safeguard such data becomes a critical determinant of consumer adoption.

Given these considerations, trust emerges as a central determinant in the adoption of Open Banking. Despite the growing global implementation of Open Banking, limited research has explored how trust, risk, performance expectancy, and attitude interact to influence consumer adoption, particularly within Islamic banking institutions in Malaysia.

Understanding these dynamics is critical for designing Shariah-compliant and consumer-centric Open Banking strategies.

Accordingly, this study aims to explore the concept of Open Banking and the factors influencing its adoption among consumers in the Islamic banking sector in Malaysia. The research focuses on two key questions: What factors contribute to the acceptance of Open Banking? What role do trust and perceived risk play in shaping consumer adoption of Open Banking? By addressing these questions, the study seeks to provide insights for regulators, practitioners, and Islamic banks in enhancing both the security and appeal of Open Banking services.

1.4 Significance of the Study

This study integrates multiple factors from prior research to examine consumer acceptance of Open Banking specifically among Islamic banking consumers in Malaysia. The findings are expected to provide a foundation for developing a service evaluation framework to assess the adoption of financial technologies, particularly within the Islamic banking sector. By expanding current knowledge on technology acceptance in the context of Open Banking, this research offers practical insights for enhancing strategic planning aimed at attracting potential consumers and strengthening institutional competitiveness and sustainability. Moreover, the results are anticipated to guide Islamic financial institutions in refining their products and services through the effective implementation of Open Banking solutions that meet consumer expectations.

From an academic perspective, this study addresses a notable gap in the literature. Previous research has primarily explored technology acceptance in contexts such as e-

shopping, e-commerce, e-finance, e-banking, and mobile banking (Cheng et al., 2006; Gu et al., 2009; Lee, 2009; Lin, 2011; Zhou, 2012), often employing established theoretical models such as the Technology Acceptance Model (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), and the Decomposed Theory of Planned Behaviour (Taylor & Todd, 1995). However, limited attention has been given to the role of trust and other psychological and behavioural factors in shaping Islamic banking consumers' intention to adopt Open Banking. This research addresses that gap by proposing and validating trust in institutions, alongside other determinants, as factors influencing consumers' willingness to share personal financial information.

Given that Open Banking remains a relatively new concept in Malaysia, this study is exploratory in nature, focusing on the regulatory and practical concerns affecting Islamic banking consumers' adoption decisions. Furthermore, the adoption of a mixed-methods approach, which has not been extensively applied in Open Banking research, provides an additional methodological contribution to the academic field. Collectively, this study aims to bridge theoretical and practical gaps, extending the literature while offering actionable insights for Islamic banking institutions seeking to enhance consumer adoption of Open Banking.

1.5 Scope of the Study

This study focuses on Islamic banking consumers in Malaysia and their intention to adopt Open Banking services. It examines the factors influencing consumers' willingness to use Open Banking and share their personal financial information with third-party providers. The study identifies the key determinants affecting consumer intention, which include attitude,

subjective norms, perceived behavioural control, performance expectancy, effort expectancy, financial confidence, trust, and perceived risk.

The research is limited to consumers of Islamic banks in Malaysia and does not extend to consumers of conventional banks or financial institutions outside the country. The dependent variable is consumers' intention to share personal financial information in Open Banking, while the independent variables are the factors listed above that may influence this intention. By focusing specifically on Islamic banking consumers, this study seeks to provide insights that are both contextually relevant and actionable for stakeholders in the Malaysian Islamic banking sector.

1.6 Organization of the Study

This thesis is structured into seven chapters, each addressing specific aspects of the research on consumer acceptance of Open Banking in Islamic banking institutions in Malaysia.

Chapter One introduces the study, providing the background, problem statement, significance, scope, and an overview of the research objectives.

Chapter Two presents a comprehensive review of the literature. It begins with an introduction to Open Banking and its data-sharing aspects, followed by a discussion of key theories related to behavioural intention and technology acceptance, including the Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and UTAUT2. This chapter also reviews prior studies on Open Banking usage intentions and develops a conceptual framework for understanding the factors influencing consumer acceptance,

covering variables such as attitude, subjective norms, perceived behavioural control, performance expectancy, effort expectancy, financial confidence, risk, and trust.

Chapter Three outlines the methodology employed in this research, including the philosophical assumptions, research paradigm, ethical considerations, and research objectives. It details the design and procedures of three studies: Study 1, a qualitative investigation; Study 2, a quantitative study; and Study 3, a second quantitative study. For each study, the chapter describes the research design, sampling techniques, data collection instruments, and data analysis methods.

Chapters Four, Five, and Six present the findings of the respective studies. Chapter Four reports the qualitative findings from Study 1, including data organization and interpretation. Chapter Five presents the results of the Study 2, the first quantitative study, including respondent profiles, descriptive analyses, cluster analyses, factor analyses, and regression analyses. Chapter Six reports the findings of the Study 3, the second quantitative study, focusing on respondent profiles, cluster analyses, statistical results, and structural model analysis. Sub-sample analyses are also presented in this chapter.

Chapter Seven concludes the thesis by summarizing the key findings, discussing the contributions and implications of the research, addressing limitations, and suggesting directions for future research.

This structure provides a logical progression from the conceptual foundations and theoretical background to the methodological approach, empirical results, and conclusions, ensuring a comprehensive understanding of consumer acceptance of Open Banking within the context of Islamic banking in Malaysia.

1.7 Conclusion

This chapter introduced the study, outlining the background, problem statement, significance, and scope of the research on consumer acceptance of Open Banking in Islamic banking institutions in Malaysia. It highlighted the growing importance of Open Banking within the financial sector and identified gaps in knowledge, particularly regarding the factors influencing adoption among Islamic banking consumers. The rationale for the study was established, emphasizing both academic and practical significance, while the scope clarified the boundaries and focus of the research.

In summary, the growth of Open Banking in Malaysia, coupled with changing consumer expectations and the unique principles of Islamic banking, presents both opportunities and challenges for financial institutions. While global studies have explored technology adoption and financial innovation, research specifically examining the acceptance of Open Banking among Islamic banking consumers in Malaysia remains limited. Addressing this gap requires a thorough understanding of the relevant theoretical and empirical literature. Therefore, the following chapter, the review of literature, provides the foundation for developing the research framework and hypotheses that guide this study.

CHAPTER TWO

Review of the Literature

2.1 Introduction

This chapter presents a critical synthesis and evaluation of the prevailing concepts and measurement frameworks that underpin the theoretical and empirical understanding of Open Banking acceptance. As Open Banking is a relatively new area in literature, the internet and mobile banking adoption precede the development of a conceptual framework on the Open Banking acceptance model. The chapter begins with an examination of the concept of Open Banking, data-sharing related issues, and Open Banking in the Malaysian context, followed by a critical review of behavioural intention theories and technology acceptance models, culminating in the development of the conceptual framework for this study.

2.2 Open Banking

Open Banking has emerged as a significant force in the transformation of the global financial services landscape. According to market forecasts, the global Open Banking market was estimated at USD 28.2 billion in 2024 and is anticipated to expand at a compound annual growth rate (CAGR) of 19.2% from 2025 to 2034 (Global Market Insight, 2024). This growth reflects increasing demand for secure, consumer-driven data-sharing frameworks that facilitate innovation, competition, and efficiency in financial services. In Malaysia, the Open Banking ecosystem remains in its early stages but shows strong potential, driven by initiatives from Bank Negara Malaysia (BNM) and rising FinTech participation (Central Bank of Malaysia, 2025). The market is projected to expand steadily, supported by digital banking licenses and

the adoption of Application Programming Interfaces (API) standards which aim to improve interoperability and customer-centric innovation (Central Bank of Malaysia, 2022). Hence, the expectation is that they will benefit the consumer and banking industry.

Although Open Banking is becoming more popular, widely adopted, and effective in many ways, Open Banking faces difficulties or challenges in clearly defining what it is, what it exactly offers, or how it should be understood by consumers, businesses, and regulators (Colangelo & Khandelwal, 2025). According to Open Banking Initiative (2017), the working definition of Open Banking is “Open Banking enables personal customers and small businesses to share their data securely with other banks and with third parties, allowing them to compare products on the basis of their own requirements and to manage their accounts without having to use their bank” (Open Banking, 2017).

On the other hand, Basel Committee on Banking Supervision (2019) stated that Open Banking has emerged as a transformative paradigm in the financial services industry, defined by customer-consent-driven data-sharing frameworks that promote interoperability between financial and non-financial entities through secure APIs. These APIs permit third-party developers, with explicit consumer authorisation, to access financial data in order to develop and deliver a range of innovative services such as real-time payments, personal financial management tools, and credit scoring applications.

An application programming interface (API) is a set of protocols that enables different software applications to interact seamlessly, facilitating direct data exchange or access to another application's functionalities through automated processes (BNM, 2019). In the context of Open Banking, access to restricted or sensitive data, such as consumer banking information is governed by strict confidentiality protocols, regulatory frameworks, and

institutional safeguards to protect consumer privacy and maintain the integrity of financial institutions (BNM, 2019).

The publication of open data serves several key objectives based on the Policy Document on Publishing Open Data Using API (BNM, 2019). These include enhancing small and medium-sized enterprises' (SMEs) access to financial products and services, improving the comparability of motor insurance and Islamic insurance or also known as takaful, offerings in line with market liberalisation, fostering FinTech integration to allow consumers to evaluate a wide range of financial products suited to their specific needs, and enhancing the overall customer experience by expanding choice. Furthermore, the policy highlights the importance of leveraging technological innovation to support the provision, distribution, and utilisation of financial services.

Celine and Iqbal (2017) identify three primary types of APIs currently used in the market. The first is the public or open API, which allows third-party developers and partners to access data for creating innovative applications and products, often facilitated by developer engagement and extended market research. The second is the partner or business-to-business (B2B) API, which provides controlled access to business partners including suppliers, resellers, and service providers to enable efficient integration, reduce operational costs, facilitate monetisation, and strengthen security. The third type is the internal API, which functions exclusively within an organisation to improve operational efficiency, enhance data security, and reduce development costs.

From a technical perspective, Gozman, Hedman, and Sylvest (2018) emphasize the central role of Open APIs in enabling secure third-party access to a firm's internal systems. Such access is governed by strict security, privacy, and contractual standards, fostering a

collaborative ecosystem akin to platform models employed by technology companies like Facebook, Amazon, and PayPal. This structure facilitates co-creation between incumbent institutions and external developers, expanding market reach while driving customer-centric innovation.

Plaitakis and Staschen (2020) provide a regulatory perspective by defining an Open Banking regime as “a consent-based data-sharing infrastructure mandated or endorsed by regulators to stimulate competition and innovation” (p.4, 2020) While many such regimes include payment initiation services, which refers to services that allow a licensed third-party provider to initiate a payment from consumers’ bank account on their behalf with explicit consent from the consumer (Plaitakis & Staschen, 2020). However, this characteristic is not considered essential to the Open Banking definition within their regulatory framing of Open Banking regime (Plaitakis & Staschen, 2020). Instead, Open Banking frameworks are characterized by data exchanges between banks (data holders) and third-party providers (data users), usually without direct contractual relationships but contingent on compliance with licensing, technical, and security standards. Voluntary schemes lacking regulatory oversight fall outside this formal definition.

Laplante and Kshetri (2021) present Open Banking as a technology-enabled ecosystem that securely shares financial data through digital channels. Their analysis identifies several enablers of Open Banking adoption, including clear regulatory frameworks, the availability of standardized and secure APIs, and consumer trust in digital finance. However, they also highlight key barriers, such as concerns about data privacy, cybersecurity risks, and resistance from traditional financial institutions.

In a development-focused context, Rastogi et al. (2023) explore the use of Open APIs in banking as a means of advancing financial inclusion in India. Their research illustrates how API-enabled infrastructures can facilitate affordable and tailored financial services for underserved communities, contributing to broader economic development and poverty reduction initiatives.

Despite growing interest, the conceptual boundaries of Open Banking remain fluid and contested. Araluz and Plaza (2022) identify four prevalent interpretations within academic and policy discourses: (1) Open Banking as a reconfiguration of retail banking into a platform-based business model; (2) as a manifestation of a broader trend in data sharing, particularly in the financial domain; (3) as the evolving interface between FinTech firms and incumbent banks; and (4) as a phenomenon shaped and legitimized by jurisdiction-specific regulatory frameworks. This interpretation covers all aspect of Open Banking use in the industry as well as in academic framework.

The term "Open Banking" is thus often used as an umbrella term encompassing a range of data-sharing practices. These include unilateral API deployments by individual financial service providers (e.g., Paytm), industry-led collaborative efforts (e.g., Nigeria's OB initiative and The Clearing House in the U.S.), and formal regulatory mandates such as the U.K.'s Open Banking Standard and the European Union's Revised Payment Services Directive (PSD2). While varying in scope and governance, these models share common goals which are promoting innovation, expanding consumer choice, and enhancing the accessibility and efficiency of financial services.

Against this backdrop, Open Banking in this study refers to a data-sharing arrangement in which consumers' financial information is exchanged based on their explicit consent

between their primary banks and authorized third-party providers via secure Application Programming Interfaces (APIs). This framework enables consumers to access and manage data from multiple banks through a single FinTech application. Such integration offers significant potential benefits, including enhanced personal financial management, the ability to compare and select financial products tailored to individual needs, and improved overall financial decision-making.

2.3 Open Banking as A Servitized Ecosystem

The transition from general FinTech innovations to Open Banking represents a significant shift in how financial services are conceptualized and delivered (Khamitdkhanovich et al., 2025). Traditional FinTech primarily focused on digitizing existing banking functions, such as payments, lending, or wealth management, often emphasizing efficiency, accessibility, and cost reduction. While these innovations improved service delivery, they largely maintained a product-centric approach, where value was tied to individual financial products rather than the overall financial experience of the consumer. Open Banking, in contrast, introduces a service-oriented, platform-based model in which banks act as orchestrators within a broader financial ecosystem. By enabling secure data sharing with authorized third-party providers through APIs, banks facilitate the creation of integrated, personalized services that go beyond the capabilities of any single institution.

In this context, Open Banking can be conceptualized as a servitized financial ecosystem. The term “servitized” refers to the transformation of traditional product-focused offerings into integrated solutions that combine products, services, and value-creating interactions (Vandermerwe & Rada, 1988). It emphasizes customer outcomes over standalone products, highlighting how services complement and enhance the value of core

offerings (Martin et al., 2019). In banking, a conventional savings account or loan becomes part of a broader ecosystem of services, including personalized financial planning, real-time analytics, and connections with authorized third-party providers. This perspective emphasizes on how banks, partners, and consumers can co-create value, generating tailored solutions that respond to individual needs and preferences.

Marketing literature reinforces this view by emphasizing value co-creation, personalization, and customer-centric innovation as key drivers of adoption and satisfaction in service ecosystems (Struwe & Slepnirov, 2023). This perspective aligns with how Open Banking leverages secure data sharing via APIs to facilitate personalized services and ecosystem collaboration. In Open Banking, data sharing is not merely a technical requirement but a mechanism for enhancing consumer outcomes that facilitating a better financial management, informed product choices, and innovative service offerings that respond to evolving consumer preferences.

Moreover, Open Banking highlights the dual benefits of data-driven ecosystems. For consumers, access to aggregated financial data allows for more efficient decision-making, comparative analysis of products, and personalized financial guidance, effectively turning raw data into actionable insights. For banks and third-party providers, shared data provides opportunities to develop innovative business models and value-added services, improving competitiveness and fostering a culture of continuous innovation. This shift highlights the strategic importance of Open Banking, where the creation and sharing of financial data act as the foundation for both customer empowerment and ecosystem-wide growth.

By framing Open Banking as a servitized financial ecosystem, this study employs servitization as a conceptual lens to articulate how financial services are evolving from

product-centric offerings toward integrated, data-driven service systems capable of co-creating value with consumers and third-party providers. Although the empirical focus of the thesis is not on servitization per se, this framework helps clarify the unique position of Open Banking within the broader FinTech landscape.

Drawing on this lens allows the study to situate Open Banking within value co-creation and service-dominant logic discussions, highlighting the role of consumer data as a key resource underpinning innovative financial offerings and enhanced decision-making in contemporary digital finance. This perspective thus strengthens the theoretical grounding for exploring consumer acceptance and use behaviour of Open Banking in the Malaysian Islamic banking context without suggesting that servitization itself is the primary empirical subject of the research.

2.4 Data Sharing Aspect

Today, data has a value, and the promise of Open Banking is that by opening up their financial data and services to third party providers, both banks and their customers would equally benefit from this openness. Banks would make the most of the enormous treasure trove of data they hold, and their end-customers would benefit from a large set of innovative and added-value services, making their lives easier. Naturally, Open Banking comes with its own set of challenges and risks. Banking regulators, banks and third-party providers need to work together to overcome them and to find models that preserve security, satisfy consumer needs and enhance innovation. The prize is well worth the effort, which is a better, personalized, more secure and more convenient customer experience for all.

The value of financial data grows over time, especially as patterns emerge in spending behaviour, creditworthiness, and financial habits. This long-term data is highly valuable to financial institutions, FinTech, and data-driven platforms. The exchange of customer-permissioned data maintained by banks with third parties has occurred for many years; nevertheless, the growing utilization of digital devices and the swift advancement of data aggregation methods are revolutionizing retail banking services worldwide (Basel Committee on Banking Supervision, 2019).

Data is essential to the digital technology ecosystem and can affect individuals, businesses, and governments in both positive and negative ways. Data is now a significant source of value, including for manufacturing and decision-making, and supports digital transformation from an economic standpoint (Mitchell et al., 2021). Businesses, governments, people, and society at large are finding data to be an increasingly important asset. Data's prevalence and accessibility have boosted productivity and led to the development of new or greatly enhanced goods, services, and business models.

In common terminology, the term “data” is interchangeable with terms such as “information,” “evidence” or even “knowledge”. According to Organisation for Economic Co-operation and Development (OECD), the term data “refers to recorded information in structured or unstructured formats, including text, images, sound and video” (Mitchell et al., 2021). In other instances, the term “data” is used to refer to Internet Protocol (IP) traffic or the volume of digitised information stored on servers and other hardware. While both notions are relevant in a variety of policy and technology debates, they are either too broad or ill-suited for measuring the value of data. On the other hand, definition of data recently proposed in the context of the System of National Accounts (SNA):³ stated that data is the “Information

content that is produced by accessing and observing phenomena; and recording, organizing and storing information elements from these phenomena in a digital format, which provide an economic benefit when used in productive activities” (ISWGNA, 2022).

According to the OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data (OECD, 2019), personal data refers to “any information relating to an identified or identifiable individual (data subject).” Information that does not pertain to an identified or identifiable person is thus considered non-personal data. However, advances in data analytics have increasingly blurred this distinction by enabling the re-identification of individuals from data that may initially appear non-personal (OECD, 2019). The European Union’s General Data Protection Regulation (GDPR) defines personal data as “any information that relates to an identified or identifiable living individual” (European Union, 2016). The regulation emphasizes that even disparate pieces of information, when combined, may lead to the identification of a person and therefore qualify as personal data. Moreover, the GDPR stipulates that data which has been anonymized or encrypted but remains capable of re-identification still falls within the scope of personal data protection.

From Malaysian context, according to Personal Data Protection Act 2010 (PDPA 2010), “personal data” means “any information in respect of commercial transactions, which “(a) is being processed wholly or partly by means of equipment operating automatically in response to instructions given for that purpose; (b) is recorded with the intention that it should wholly or partly be processed by means of such equipment; or (c) is recorded as part of a relevant filing system or with the intention that it should form part of a relevant filing system, that relates directly or indirectly to a data subject, who is identified or identifiable from that information or from that and other information in the possession of a data user” (PDPA, 2010).

Open Banking relies heavily on data exchange between the banks and the third-party provider in its ecosystem. Through APIs, Open Banking allows third-party financial service providers access to financial data and services. Tim Berners-Lee has expressed concern about the centralised of control and personal data in the hands of big tech companies such as Google and Facebook (Katz, 2012). He referred to them as "silos," emphasizing that these companies have become surveillance platforms and gatekeepers of innovation due to their control over vast troves of user data. To address this issue, Berners-Lee proposes a different approach, focusing on technology that gives individuals more power over their personal data (Mansour et al., 2016). The goal is to move towards a more decentralized and user-centric web, where individuals have greater control and ownership of their personal data.

The Solid specification, developed by Tim Berners-Lee who is the inventor of the World Wide Web was designed to promote interoperability among data and applications while placing control over data firmly in the hands of individuals (Mansour et al., 2016). However, social media are just one-use case picked by the Solid team to illustrate its concept (Werbrouck et al., 2019). The same set of specifications and tools can be used for other domains as well. Solid allows users to store their personal data in safe containers known as "Pods," with access strictly restricted by the individual or entity that owns the pod. This means that third parties can only access data with the specific authorisation of the pod owner, who could be an individual, a data subject, or an organisation. Pods can be self-hosted or managed by a trusted third-party source. These pods establish a decentralised data ecosystem that encourages secure and user-consented data sharing (Buyle et al., 2020). This model reflects the fundamental goals of Open Banking, which similarly seeks to decentralize data ownership

and provide users with the autonomy to share their financial data securely and selectively with third-party service providers for specific purposes.

In summary, Tim Berners-Lee advocates for empowering individuals with control over their personal data, promoting a vision where data ownership is decentralized, and users have the ability to grant selective access to companies for specific purposes. This approach is seen as a response to the growing concerns about privacy and the concentration of data-driven power in a few large tech corporations. These ideas closely align with the principles underlying Open Banking, which also seeks to shift control over financial data from institutions to individuals.

In the Open Banking model, customers are given the authority to grant or deny access to their financial information, enabling them to share specific types of data such as transaction history or account balances with third-party providers for clearly defined purposes. By placing consent and transparency at the centre of financial data sharing, Open Banking mirrors Berners-Lee's call for a more ethical and user-centric data environment. Moreover, just as his vision challenges the dominance of tech giants over user data, Open Banking aims to break the traditional banks' monopoly on financial information, fostering competition, innovation, and greater consumer choice within the financial ecosystem.

2.5 Open Banking in Islamic Banking Context

In the context of Islamic banking in Malaysia, the implementation of Open Banking holds significant promise for Shariah-compliant financial innovation. As financial data accumulates, it becomes a strategic asset for creating tailored Islamic FinTech solutions. Tim Berners-Lee's vision of decentralized data ownership supports a model where consumers maintain control

over the long-term value of their data. This resonates with Islamic principles of justice, trust, and mutual benefit, positioning Open Banking not only as a technological shift but also as an ethical consideration that in line with Islamic finance.

Islam places a strong emphasis on privacy, trust (*amanah*), and ethical conduct in handling information. Although classical Islamic teachings do not specifically address digital data, the core principles found in the Qur'an and Hadith provide a robust ethical framework applicable to contemporary data issues (Suwondo, 2023).

First, privacy is sacred (*Hifz al-'Ird*). The Qur'an explicitly forbids spying or unwarranted intrusion: "Do not spy or backbite one another..." (*Surah Al-Hujurat*, 49:12). This highlights the importance of consent and confidentiality in data sharing. Second, the handling of data is a trust (*amanah*), and those entrusted with it are accountable for how it is used and protected: "Indeed, Allah commands you to render trusts to whom they are due..." (*Surah An-Nisa*, 4:58). Third, Islamic ethics stress informed consent and transparency, especially in matters affecting individuals' rights. Fourth, the maxim *la darar wa la dirar* which is "do not cause harm nor reciprocate harm" calls for harm prevention in data use, such as avoiding data breaches, exploitation, or misuse. Finally, justice (*adl*) and benevolence (*ihsan*) must guide data sharing practices to ensure fairness and prevent discrimination or manipulation.

In essence, Islam views data through the broader lens of ethical stewardship, privacy, and public good. As a result, in Islamic banking institutions, Open Banking systems must be scrutinised against these fundamental Islamic values to ensure that confidence, dignity, and justice are maintained.

2.6 Theories of Behaviour Intention and Acceptance of Technology

According to Lakatos (1978), experimental predictions never come only from a theory; they come from a combination of a theory and assumptions that are outside the theory, which he termed auxiliary assumptions. Following this, several theories have been considered in conducting the study to establish a solid research framework. Among the theories related to the study on intention and technology acceptance area are the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the technology acceptance model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). The following Table 2.5.1 summarises these behavioural and technology adoption theories. It compares them in terms of their key constructs, conceptual formula, main applications, strengths, limitations.

Table 2.5.1: Overview and Comparison of Theories for Technology and Behavioural Adoption in Open Banking

Theory & Developer	Key Constructs	Applications	Strengths	Limitations
Theory of Reasoned Action (TRA) – Fishbein & Ajzen, 1969	Attitude (A), Subjective Norms (SN)	Health behaviour, consumer decision-making, addiction prevention, technology adoption	Simple, clear, foundational; highlights role of attitudes and social norms	Assumes rationality and full volitional control; does not include perceived control, trust, risk, or cultural factors
Theory of Planned Behaviour (TPB) – Ajzen, 1985, 1991	Attitude (A), Subjective Norms (SN), Perceived Behavioural Control (PBC)	Health behaviour, consumer behaviour, environmental behaviour, technology adoption	Addresses TRA limitation by including perceived control; widely used empirically	Does not account for emotional states, fear, past experiences; may overlook dynamic factors in technology adoption
Technology Acceptance Model (TAM) – Davis, 1989	Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude (A)	Information systems adoption, technology acceptance	Simple, focused on system-related beliefs; predictive for technology use	Narrow scope; ignores social influence, perceived control, trust, risk, and privacy
Unified Theory of Acceptance	Performance Expectancy, Effort	Technology adoption in	Comprehensive, integrates eight prior	Focused on individual level; may

Theory & Developer	Key Constructs	Applications	Strengths	Limitations
and Use of Technology (UTAUT) – Venkatesh et al., 2003	Expectancy, Social Influence, Facilitating Conditions; Moderators: Age, Gender, Experience, Voluntariness	organizations, e-commerce, mobile banking, healthcare, FinTech	models; accounts for social influence and facilitating conditions; empirically strong	need adaptation for early-stage technologies or privacy-sensitive contexts
Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) – Venkatesh et al., 2012	Original UTAUT constructs + Hedonic Motivation, Price Value, Habit	Consumer-oriented technology adoption (apps, entertainment, mobile services)	Broader, consumer-focused; includes enjoyment, cost, and habit	Not fully relevant for utilitarian, regulated financial technologies; adds complexity; habit and hedonic motivation may be irrelevant in early Open Banking adoption

2.4.1 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action or known as (TRA) is a psychological concept established as a framework in effort to understand and predict human behaviour, particularly volitional behaviours, using the effect of individual attitudes and subjective norms (Fishbein & Ajzen, 1969). It was developed in response to growing dissatisfaction with traditional attitude-behaviour research, which often showed weak correlations between people’s attitudes and their actual voluntary behaviours (Hale et al., 2009). Its development was significantly influenced by Fishbein’s (1967) earlier work on the attitudinal model, which was later formalised into TRA to better understand the cognitive processes underlying intentional behaviour.

The central idea of TRA is that an individual's behavioural intention is determined by their attitude and subjective norms. Specifically, Behavioural Intention (BI) = Attitude (A) + Subjective Norms (SN) where attitude reflects an individual's positive or negative evaluation

of performing the behaviour, and subjective norms refer to the perceived social pressure to perform or not perform the behaviour (Fishbein & Ajzen, 1975).

TRA was initially applied in contexts such as health behaviour particularly contraception use (Albarracín et al., 2001; Sable et al., 2006), and has since been extended to numerous domains (Sheppard et al., 1988) including consumer decision-making (Ryan & Bonfield, 1975; Ha, 1998), addiction prevention (Neighbors, Foster & Fossos, 2013), and technology adoption (Yuen & Ma, 2008; Olushola & Abiola, 2017; Buabeng-Andoh, 2017). In the context of addiction studies, for instance, TRA has been used to explain how adolescents' perceptions of parental and peer disapproval can reduce intentions to engage in harmful behaviours such as smoking. This underscores the centrality of injunctive norms, which are grounded in the perceived expectations of significant others, in shaping behavioural intentions.

Despite its wide applicability, TRA has notable limitations. A core assumption of the theory is that individuals behave rationally and with full volitional control. However, subsequent research (Ajzen, 2011) has pointed out that real-world behaviours are often influenced by non-volitional factors such as time constraints, limited information, cognitive biases, or structural barriers. These criticisms highlight TRA's insufficiency in explaining behaviour where perceived or actual control is low.

Moreover, TRA's explanatory power weakens in complex decision-making environments such as financial technology adoption where risk, trust, privacy, and security are salient. In the context of Open Banking, users must navigate not only attitudes and perceived social norms, but also concerns about the safety of data sharing, institutional trust, and the influence of external regulatory environments. TRA does not explicitly incorporate

these constructs, making it less robust for predicting behaviours in data-sensitive, trust-dependent contexts like Open Banking.

TRA also presents a challenge in a cultural context. TRA assumes that subjective norms are primarily shaped by the expectations of close social referents (family, friends, peers). However, this assumption may not generalise across cultures with varying levels of collectivism or individualism. In collectivist societies, broader community or religious expectations may weigh more heavily on behavioural intention, which TRA in its original formulation does not fully account for (Kippax & Crawford, 1993).

Nevertheless, TRA remains a foundational model and has significantly influenced the development of subsequent theories, including the Theory of Planned Behaviour (TPB) (Ajzen, 1991) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), both of which extend TRA by incorporating perceived behavioural control and facilitating conditions, respectively. These additions improve explanatory power in contexts where individuals face constraints beyond attitude and norms.

In the context of Open Banking adoption, TRA offers a useful starting point for analysing consumer intentions, particularly regarding social acceptability and personal evaluation of using digital financial services. Its simplicity and conceptual clarity make it a practical framework. However, to enhance its relevance, TRA should be integrated with constructs such as trust, perceived risk, and cultural orientation. This is especially critical given the privacy, security, and regulatory concerns unique to Open Banking platforms.

In conclusion, while the Theory of Reasoned Action provides a valuable framework for understanding the role of attitudes and subjective norms in shaping behavioural intentions,

its application to Open Banking adoption should be approached critically. The theory must be complemented by other models and contextualised factors, particularly trust, risk, privacy, and cultural dimensions to capture the full complexity of consumer decision-making in the digital financial landscape.

2.4.2 Theory of Planned Behaviour (TPB)

As an extension of the TRA, Fishbein and Ajzen (1975) has further developed the Theory of Planned Behaviour (TPB) aimed to provide a more comprehensive framework in learning and predicting human behaviour by including perceived behavioural control alongside attitudes and subjective standards. According to TPB, individual behaviour is influenced by behaviour intentions, which are determined by three factors: an individual's attitude towards behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991).

TPB was established in the early 1980s as an extension of the TRA since TRA could not account for situations in which people did not have complete control over their actions, even if they had positive attitudes and perceived social support. In Ajzen (1985) the first comprehensive description of TPB is presented. The model was created to solve the inadequacies of TRA and to better account for human decision-making and behavioural intents across a wide range of contexts. Specifically, Attitude (A) + Subjective Norms (SN) + Perceived Behavioural Control (PBC) = Behavioural Intention (BI). In this equation, a stronger intention to engage in a behaviour is more likely when the individual has a more favourable attitude towards the behaviour, with their significant individuals supporting it, and also, they believe that they have sufficient control over the behaviour's execution.

As of April 2020, TPB (Ajzen, 1991, 2012) has emerged as one of the most widely utilised frameworks in the social and behavioural sciences, with more than 4,200 empirical

publications citing it in the Web of Science (Bosnjak, Ajzen & Schmidt, 2020). This widespread adoption reflects its utility in explaining a broad range of human behaviours, including those related to technology adoption, financial decision-making, and consumer behaviour. It has demonstrated broad application across a variety of domains, including health psychology, consumer behaviour, environmental psychology, and technology adoption.

In health-related contexts, TPB has been used to predict behaviours such as exercise participation, medication adherence, and dietary choices (Ajzen, 1991; Godin & Kok, 1996). In the context of consumer behaviour, it has been applied to understand purchasing decisions, brand loyalty, and ethical consumption (Armitage & Conner, 2001; Ajzen, 2005). Environmental behaviours such as recycling, energy conservation, and sustainable transport choices have also been examined through the TPB framework (Bamberg & Möser, 2007; Kaiser, Hübner, & Bogner, 2005). Moreover, TPB has been widely used in studies on technology adoption, particularly to explore user intentions to engage with new technologies and digital services (Taylor & Todd, 1995; Varma, 2018; Venkatesh & Davis, 2000).

In the context of Open Banking, TPB can be utilized to understand and predict the consumer behaviour as it emphasises on three major influences on intentions: attitudes, subjective norms, and perceived behavioural control. These elements can be useful in analysing the intent to use Open Banking. The model provides insight into the adaptability of the variables influencing intentions and thus may help to develop interventions to positively influence users' intentions toward Open Banking.

However, some critics contend that TPB lacks the depth required to fully capture the complexity of human decision-making (Ramos, 2024), especially in rapidly evolving contexts like Open Banking, where behaviours are influenced by a range of dynamic and interconnected

factors. According to Ramos (2024), TPB may overlook important psychological and contextual factors such as fear, perceived threat, emotional states, and past experiences that can strongly shape an individual's intentions and motivation. These elements can influence behaviour in ways that extend beyond the scope of TPB's core constructs. The aspect of sharing the personal financial information via Open Banking might generate privacy and security concerns. Therefore, TPB by its own might not be able to appropriately address these critical problems in this setting. The rapid speed of technology change can make it difficult to successfully implement a paradigm like TPB. It might not be sufficient to take into consideration on the evolving technologies and their possible impact on Open Banking adoption.

Nevertheless, TPB can be used in conjunction with other theories to acquire a better understanding of consumer attitudes, subjective norms, and perceived behavioural control in relation to open banking. TPB can be developed to adapt to circumstances, such as different countries or demographic groups, to acquire a clear insight on Open Banking intention (Mutambik, 2023). Other than that, as TPB stresses that subjective norms are the definite factors in intention to use, the different setting may produce a different result and while attitudes and perceived behavioural control consistently contribute to the formation of intentions, the impact of subjective norms often varies depending on the specific behaviour under consideration (Kufaine, 2024).

Thus, the Theory of Planned Behaviour is relevant as a useful framework for analysing the intention to adopt open banking, revealing significant determinants of such intentions. However, it is important to adapt the model in conjunction with other models and

considerations, such as specific attribute of the context, the privacy issues and differences in culture in order to provide a thorough analysis of Open Banking adoption intention.

2.4.3 Technology Acceptance Model (TAM)

Building upon the foundation of the Theory of Reasoned Action (TRA) and its extension, the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM) has been developed by Davis (1989). TAM was introduced to explain and predict how users come to accept and use information systems. It is conceptually rooted in TRA, which posits that an individual's actual behaviour is driven by their behavioural intention, itself shaped by their attitudes and subjective norms (Fishbein & Ajzen, 1975). In this context, behavioural intention reflects an individual's readiness to perform a particular action. Similarly, TAM incorporates this foundation by suggesting that users' acceptance of technology is primarily influenced by two key beliefs which are perceived usefulness and perceived ease of use. These beliefs shape the individual's attitude toward using the system, which in turn affects their intention to adopt and engage with the technology.

TAM generally assesses whether an individual is likely to adopt a technology based on three key factors: its perceived usefulness or functionality (Davis et al., 1989), perceived ease of use (Davis et al., 1989), and the anticipated benefits of its adoption (Dishaw & Strong, 1999). An individual's belief in a technology can be significantly shaped by how easy it is to use, which may directly influence their attitude (A) and behavioural intention (BI) to use it, as well as by the impact of various external factors (Davis et al., 1989; Taylor & Todd, 1995).

Although TAM is often viewed as a simplified model compared to TRA and TPB, its simplicity lies not merely in the number of constructs but in its narrow focus on system-related beliefs namely, perceived usefulness and perceived ease of use (Hubona & Cheney, 1994;

Igbaria et al., 1997). However, this very simplicity also limits its explanatory power, especially in complex decision-making environments such as Open Banking. Unlike traditional system adoption scenarios, Open Banking involves high-stakes decisions around data sharing, third-party access, and trust in digital financial ecosystems which are the factors that TAM does not explicitly address. While TRA and TPB incorporate social and normative pressures and perceived behavioural control, which can capture user hesitations in such contexts, TAM assumes a largely rational and utility-driven process (Ishengoma, 2024). This assumption may not hold in a financial environment where privacy concerns, trust, and data security are central to user acceptance. Therefore, although TAM is widely applied, it lacks the conceptual breadth to fully explain consumer decision-making in Open Banking, particularly in relation to users' willingness to share sensitive financial data with unfamiliar third parties.

2.4.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

While the Technology Acceptance Model (TAM) has been widely used to explain technology adoption, it has also faced criticism for its limited scope. In response to the need for a more comprehensive framework, the Unified Theory of Acceptance and Use of Technology (UTAUT) emerged as a promising alternative. According to Dwivedi et al. (2010), UTAUT offers a broader and more integrative approach to understanding technology acceptance. Developed by Venkatesh et al. (2003), the selected variables from across eight models includes TRA, TAM, motivational model, TPB, model combining TAM and TPB, model of PC utilization, Innovation Diffusion Theory (IDT) and social cognitive theory (SCT) has been incorporated to formulate UTAUT.

Performance expectancy, effort expectancy, social influence, and facilitating conditions are the four primary variables that constitute UTAUT (Venkatesh, 2003). These factors have a

direct impact on user acceptance and usage patterns. In addition, the model uses four moderators: age, gender, experience, and the major effects' willingness to be used voluntarily. According to Venkatesh et al. (2003), UTAUT outperformed eight separate models and may account for up to 70% of the variation in intention.

The original UTAUT model has been widely applied across various domains to examine user acceptance and technology (Venkatesh et al., 2003; Venkatesh & Zhang, 2010; Venkatesh, 2012). In Information Systems, UTAUT has served as a robust framework for understanding IT adoption in organizational settings (Venkatesh et al., 2003). It has also been extensively used in E-Commerce research to assess consumer behaviour in online shopping environments (Gefen et al., 2003; Tarhini et al., 2017).

In the Healthcare sector, UTAUT has been applied to study the adoption of electronic health records and clinical decision support systems (Tavares & Oliveira, 2018; Yoo, et al., 2022; Al-Momani & Ramayah, 2025). For Mobile Technologies, the model has helped explain user intention in mobile banking and mobile learning contexts (Zhou et al., 2010; Wang et al., 2009). More recent, UTAUT has been adapted to fit the FinTech landscape, including studies on digital wallets, peer-to-peer lending, and Open Banking adoption (Lai, 2017; Oliveira et al., 2016; Alalwan et al., 2018; Chan et al., 2022). Furthermore, Venkatesh et al. (2012) has further suggested that the UTAUT model be tested further in a different setting to provide a better understanding of its adoption in a different environment.

Due to its adaptability and flexibility, UTAUT has been an important framework in analysing and predicting the acceptance and use of a wide range of technologies across several fields, given above. It is a comprehensive and integrative model that takes into account a variety of elements influencing technology adoption, such as performance expectancy, effort

expectancy, social influence, and facilitating conditions. This scope of the application can be useful for assessing Open Banking adoption. The theory has a solid empirical foundation, with a significant amount of empirical research that supports its concepts and interactions. As a result, it is a trustworthy and evidence-based model for predicting consumers' intentions to use open banking. By integrating domain-specific variables, UTAUT can be changed and customised to settings such as open banking. Because of this adaptability, a more comprehensive analysis of technology adoption in this specific context is possible.

Other than that, UTAUT can be adapted to includes Open Banking-specific aspects such as data security and trust in financial institutions to ensure it is relevant to Open Banking adoption studies. It can help shape the design of focused interventions to increase the adoption and use of Open Banking services by addressing characteristics identified by the model. Despite that, UTAUT may not fully address the significant privacy and security concerns associated with open banking, which might be a major barrier to adoption. As technology is constantly evolving from one phase to another, there is a different consideration to take between adopting a technology for the work purpose and for a personal use purpose. As a result, it may need to be adapted to address privacy and security concerns unique to open banking, and it should be used in combination with other models to provide a clear insight on the context of Open Banking intention usage. As UTAUT primarily focuses on individual-level determinants of technology acceptance and use, it provides an appropriate theoretical framework for examining the factors influencing consumer adoption of Open Banking services.

Within the original Unified Theory of Acceptance and Use of Technology (UTAUT), facilitating conditions (FC) are defined as “the degree to which an individual believes that an

organisational and technical infrastructure exists to support the use of the system” (Venkatesh et al., 2003, p. 451). In the UTAUT framework, facilitating conditions are theorised to have a direct effect on actual usage behaviour rather than behavioural intention (Venkatesh et al., 2003, p. 454). Since the present study focuses on consumer intention to adopt Open Banking, rather than post-adoption usage behaviour, the theoretical alignment of facilitating conditions with the dependent variable is limited.

Beyond this theoretical rationale, several contextual and methodological considerations further justify its exclusion in the Malaysian Open Banking environment. First, the conceptual relevance of facilitating conditions is reduced in digitally mature contexts. Most Malaysian banking customers already possess the baseline digital infrastructure required to access digital financial services, including smartphones, internet connectivity, mobile banking applications, and basic digital literacy (Bohari, 2024). Consequently, facilitating conditions are less likely to differentiate consumers’ adoption intentions because access to the necessary technological resources is already widely available.

Second, Open Banking can be viewed as an extension of existing digital banking services rather than a completely new technological system (Zachariadis & Ozcan, 2017). As a result, consumers’ evaluations are less likely to focus on whether they have the ability or resources to use the service, and instead shift toward considerations such as perceived value, trust, and risk. In this context, user-related factors such as performance expectancy, effort expectancy, perceived risk, trust, and financial confidence become more salient predictors of adoption intention than the availability of technical support or infrastructure.

Third, empirical evidence from FinTech and digital banking studies frequently reports facilitating conditions as statistically insignificant when behavioural intention, rather than

actual usage behaviour, is the dependent variable (Venkatesh et al., 2003). Including facilitating conditions in such models may introduce conceptual redundancy with related constructs such as effort expectancy, digital literacy, or prior experience, potentially reducing model parsimony and interpretability.

Finally, within the context of Islamic banking, consumer adoption decisions may also be influenced by additional considerations such as Shariah compliance, regulatory oversight, data governance, and trust in financial institutions or third-party providers. These institutional and ethical considerations are likely to play a more important role in shaping consumers' willingness to adopt Open Banking services than perceptions of technological infrastructure.

Considering all these, the exclusion of facilitating conditions from the model is considered appropriate and consistent with both the original UTAUT framework and the early-stage development of Open Banking services in Malaysia.

2.4.5 Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) was introduced as an enhancement of the original UTAUT model, aiming to provide a broader and more consumer-oriented perspective on technology adoption (Venkatesh et al., 2012). While UTAUT (Venkatesh et al., 2003) successfully integrated key elements from eight prominent models to explain technology adoption in organizational settings, it was primarily designed for use in workplace environments. Recognizing the need to adapt the model for consumer contexts, Venkatesh et al. (2012) extended UTAUT by incorporating additional constructs.

Three constructs have been added into the original UTAUT framework which are the pleasure and enjoyment users derive from using the technology beyond its instrumental value

(hedonic motivation), the perceived economic cost of using the technology and how it relates to the perceived benefits (price value) and the automatic and habitual use of technology and how past behaviour influences current use (habit). UTAUT2 posits that these constructs interact to influence users' intentions to use technology and their actual usage behaviour along with the original constructs which are the performance expectancy, effort expectancy, social influence, and facilitating conditions.

The improved framework of UTAUT2 provides a comprehensive and adaptable paradigm for assessing technology acceptance and use in a variety of applications and scenarios. It provides useful insights into the elements that influence users' intents and behaviours about technology adoption. However, several constructs embedded in the UTAUT2 framework may not be relevant on the context of Open Banking technology adoption.

First, UTAUT2 was specifically developed to explain consumer adoption of hedonic and voluntary technologies, such as mobile applications, entertainment platforms, and personal digital services. However, Open Banking, particularly within Islamic banking institutions, differs fundamentally in nature. It represents a regulatory-driven financial innovation centred on data sharing, interoperability, and financial service integration rather than enjoyment-based or experiential technology use. Consequently, hedonic motivation is unlikely to serve as a primary determinant of adoption intention in this context, as Open Banking decisions are predominantly utilitarian and risk-sensitive rather than pleasure-driven.

Second, the price value construct in UTAUT2 evaluates the trade-off between perceived benefits and monetary cost. In the Open Banking ecosystem, services are typically embedded within existing banking relationships and are not directly priced as standalone consumer products. Consumers are therefore less likely to conduct explicit cost–benefit calculations in

monetary terms. Instead, concerns surrounding trust, data security, and institutional reliability are more salient in shaping intention.

Third, the habit construct in UTAUT2 assumes prior experience and repeated behavioural patterns. Given that Open Banking services in Malaysia remain at an early developmental stage, widespread habitual usage has not yet formed among consumers. Including habit as a predictor may therefore lack conceptual validity in an emerging adoption context where intention precedes routine behaviour.

Fourth, adopting UTAUT2 in full would substantially increase model complexity without necessarily enhancing explanatory power for early-stage Open Banking intention. This study integrates contextually relevant constructs such as perceived risk, trust, and financial confidence to address dimensions not explicitly covered in the original UTAUT. Therefore, expanding the framework further by incorporating UTAUT2 variables may introduce redundancy and reduce model parsimony, particularly within a Structural Equation Modelling (SEM) framework where theoretical clarity and interpretability are critical.

Importantly, the original UTAUT provides a strong expectancy-based foundation such as performance expectancy and effort expectancy aligns closely with consumer evaluation processes in financial technology adoption. Hence, extending the original model with trust and risk constructs rather than incorporating hedonic and habit-based dimensions, the present study achieves greater theoretical alignment with the institutional, regulatory, and ethical sensitivities characterising Open Banking within Islamic banking.

Considering all this, the original UTAUT framework, supplemented with context-specific constructs, was deemed more theoretically appropriate and methodologically parsimonious than adopting UTAUT2 in its entirety.

2.7 Studies and Research on Open Banking Usage Intention

As Open Banking evolves, a plethora of empirical studies and research initiatives have developed to examine its various elements, assess its implications, and address crucial challenges. The following review of the literature provides insight into empirical research and studies in the field of Open Banking.

Open Banking empirical research has explored customer acceptance and usage behaviours regarding Open Banking services. Several studies have investigated the elements that influence consumers' decisions to adopt Open Banking platforms and how they integrate these services into their financial lives. These studies provide insight into user behaviours, preferences, and the factors shaping adoption.

Chan et al. (2022) investigate the determinants of consumer adoption of Open Banking in Australia by extending the UTAUT framework with perceived risk, initial trust, and financial literacy. Using SEM on survey data from 456 participants, the study identifies performance expectancy, effort expectancy, social influence, and perceived risk as significant predictors of adoption intention. Importantly, initial trust mitigates the negative impact of perceived risk and enhances the influence of performance and effort expectancy. However, financial literacy paradoxically reduces initial trust, suggesting a sceptical stance among informed users.

This study's strength lies in adapting a well-established model to the trust-sensitive and data-intensive nature of Open Banking. By explaining 69.5% of the variance in adoption intention, it makes a substantive theoretical contribution. Yet the reliance on behavioural intention over actual usage, the cross-sectional design, and the contextual specificity to Australia's Consumer Data Right (CDR) framework limit its generalizability. Furthermore, the study does not address potential heterogeneity among consumer segments, such as variations in trust or literacy across age or income groups. Nonetheless, it sets a foundation for designing trust-building strategies and for extending adoption models to accommodate financial data-sharing contexts.

Mutambik (2023) broadens the discussion by shifting focus to post-adoption behaviour. The study develops a conceptual model that integrates both cognitive (ease of use, perceived value, reliability) and affective (support quality, perceived risk, innovation capability) dimensions of customer experience to predict loyalty intention. Survey data from Open Banking users in Saudi Arabia affirm the significance of all six factors in shaping user experience, which in turn drives loyalty. This research contributes by framing loyalty not merely as a function of utility but as a product of emotional and experiential variables, which are vital in the FinTech context. It also brings a non-Western perspective to Open Banking, responding to calls for culturally nuanced research (Tarhini et al., 2017; Mutambik, 2023). However, the study's exclusive focus on the Saudi market and self-reported measures may restrict the applicability of findings elsewhere.

While studies such as Mutambik (2023) provide valuable insights into post-adoption behaviour of Open Banking users in Islamic contexts like Saudi Arabia, the applicability of these findings to Malaysia requires careful consideration. Banking users in Islamic countries

share common cultural and religious orientations that shape financial attitudes and expectations; however, national regulatory frameworks, market maturity, and digital infrastructure create distinct user experiences.

In Malaysia, Islamic banking operates within a dual banking system alongside conventional banks, offering a broader array of Shariah-compliant products and benefiting from a highly structured regulatory environment. Consequently, Malaysian Islamic banking users may exhibit different adoption patterns, loyalty drivers, and post-adoption behaviours compared to users in other Islamic countries, where Islamic banking often functions as a niche sector (Indrawan & Rahman, 2020). Focusing on Malaysian Islamic banking users allows for a deeper examination of how both cognitive factors (ease of use, perceived value, reliability) and affective factors (support quality, perceived risk, innovation capability) influence engagement with Open Banking, and how these factors interact with local regulatory and technological conditions.

Sivathanu (2019) offers an early and context-specific examination of Open Banking adoption in India, extending TAM with trust, security, innovativeness, perceived risk, and privacy concerns. Based on data from 312 consumers, the findings suggest that trust, perceived usefulness, and ease of use positively affect adoption intention, while perceived risk and privacy concerns act as deterrents. This study reflects the dual tension between technological optimism and consumer apprehension in a rapidly digitizing emerging economy, though the absence of behavioural data, demographic granularity, and longitudinal tracking limits deeper understanding.

Araluze and Plaza (2023) deepen the exploration of trust in Open Banking adoption through an extended TAM applied in Spain. Their model includes initial trust and social

influence alongside traditional constructs, yielding an impressive 85% explanatory power. Perceived usefulness remains the strongest predictor, but initial trust and social influence also emerge as pivotal, especially in a PSD2-governed environment. This study highlights the importance of social and psychological factors in understanding Open Banking acceptance, particularly in regulatory environments designed to foster competition and security.

Desiraju et al. (2024) adopt a novel approach by analyzing over 89,000 user reviews from the Google Play Store using Structural Topic Modelling (STM). Findings spotlight core themes that affect post-adoption sentiment, including responsive service, intuitive interfaces, and the need for personalization. Dissatisfaction arises from poor navigation and lack of tailored features. Unlike intention-based surveys, this approach reflects actual user experiences, offering a closer approximation of real-world engagement.

Across these empirical studies, several themes consistently emerge which include the centrality of trust (initial and sustained), the impact of perceived risk, and the interplay between utilitarian expectations and emotional or social influences. However, the influence of these factors differs between Western and Islamic contexts. In Western settings (Australia, Spain), adoption is primarily driven by cognitive evaluation, with trust functioning instrumentally to reduce uncertainty and social influence providing guidance in low-familiarity contexts. Post-adoption satisfaction is often linked to usability, interface design, and personalization. In contrast, in Islamic contexts (Saudi Arabia), adoption and post-adoption behaviour are shaped by an integrated cognitive-affective-ethical framework. Trust and perceived risk are not only functional but ethically and religiously mediated, directly influencing adoption and loyalty. Emotional satisfaction and alignment with Shariah-

compliant financial principles drive continued engagement, while social influence manifests implicitly through communal and ethical expectations.

These comparisons highlight the importance of context-specific research. Findings from Western studies cannot be directly generalized to Islamic banking environments, where cognitive, affective, and ethical considerations intersect. By focusing on Malaysian Islamic banking users, this study contributes empirical insights into how these factors interact within a dual banking system, offering a deeper understanding of Open Banking adoption in non-Western, ethically sensitive financial settings.

2.8 Development of a Conceptual Framework on Open Banking Acceptance Model

This section develops the conceptual framework underpinning this study on consumer acceptance of Open Banking within Islamic banking institutions in Malaysia. The framework is grounded in established behavioural intention theories, particularly the Theory of Reasoned Action and the Theory of Planned Behaviour, which posit that behavioural intention is shaped by attitudinal, normative, and control-related beliefs. These foundational theories have been widely extended in technology adoption research, including the Theory of Planned Behaviour and the Unified Theory of Acceptance and Use of Technology, to explain users' acceptance of Open Banking. The following subsections elaborate on each construct and justify their inclusion in the conceptual framework.

2.6.1 Attitude

Attitude toward behaviour is defined as an individual's positive or negative feelings (evaluative affect) toward performing the target behaviour (Fishbein & Ajzen, 1975). Attitude underpins the work in this study and in the context of Open Banking. So, in the context of Open Banking this may be regarded as both perceived usefulness and perceived ease of use.

To promote a user's willingness to use a new technology, it is necessary to let potential users believe that the new technology is easy to use and that they can benefit from using it (Chau & Hu, 2002; Davis 1986, 1989).

Although formal definitions of attitude differ, most contemporary theorists seem to agree that its dispositional and evaluative nature distinguishes it distinct. Ajzen (1988) defines an attitude as an inclination to respond positively or negatively to a certain things, person, institution, or event. Rokeach (1968) defines an attitude as a collection of interconnected dispositions to act focused on a certain thing or event.

Furthermore, when customers perceive that utilizing FinTech is a useful and convenient tool, they are more likely to enthusiastically endorse it. As a result, other consumers' attitudes on utilizing FinTech may be influenced. Therefore, the attitude will have a beneficial influence on behavioural intention to use. The usefulness and ease of use of technology acceptance factors both have positive effects on attitude (Moon & Kim, 2001; Venkatesh & Davis, 2000). Similarly, if consumers believe that FinTech is more useful for their work or are easy to use, their attitude toward using FinTech is also higher (Chuang, Liu & Kao, 2016). If users believe that the benefits provided by sharing their personal financial information with third parties in Open Banking are useful and are easy to use, then it will be likely to increase users' attitude toward Open Banking. Thus, the perceived usefulness and ease of use of FinTech are cognitive factors for consumers to accept the service.

Most previous studies showed that attitude has a significant positive impact to the behavioural intention of individual (Venkatesh & Davis, 2000). The behavioural intention of potential users was decided by subjective norms; and the behavioural intention of existing users is depending on their behaviour and attitude (Chuang, Liu & Kao, 2016). A consumer's

attitude toward using and willingness of using FinTech should have a significantly positive relationship. When consumers sense positive evaluations, they will believe that using FinTech is a good experience and increase their willingness of using them.

Furthermore, when customers see FinTech as a useful and convenient tool, they are more inclined to enthusiastically recommend it. As a result, other consumers' perceptions towards using FinTech may be influenced. Therefore, the attitude will have a positive influence on the behavioural intention to use (Khatri et al., 2020). Therefore, this research hypothesized that the consumer attitude positively influences the consumer's intentions to share their personal financial information with third parties in Open Banking.

2.6.2 Subjective Norms

The term Subjective Norm refers to people's impressions of what they believe most of the people they consider to be significant or with whom they have a close relationship would think about whether they should engage in a particular conduct. It is adapted from the Theory of Planned Behaviour by Fishbein and Ajzen (1975). In Open Banking context, it refers to how individual perceives the opinion of the people surrounding them will affect their use of Open Banking. This may be affected by family, friends, significant people in their group and in the current context the Islamic principles.

As a social being, individuals continuously seek indications from those around them about how they should act in various situations (Zhang et al., 2023; Rathbone et al., 2023). This means that the group dynamics of their peers have a significant impact on the accepted norms to which they will most likely adhere. According to Postmes et al. (2005), not only does identifying with a group lead individuals to follow its norms, but following those norms can strengthen their sense of group identity in return. As a result, investigating the normative

views held by specific societies can provide light on human behaviour, what is within and outside the resonance range of acceptability, and offer valuable insights worth contemplating especially in the context of Malaysian.

Before embracing a technology, consumers from a collectivistic society are more likely to ask for recommendations from others (Jin et al., 2008). Malaysians are generally characterised as more collectivistic than Western societies, where individuals tend to emphasise personal autonomy. In collectivistic cultures such as Malaysia, individuals perceive themselves primarily as members of social groups, including family, business networks, and ethnic communities (Yuen, Yeow & Lim, 2015). In such cultural contexts, behavioural decisions are often influenced not only by personal evaluations but also by the expectations and opinions of significant others. These groups reflect or come to define who their members are and often demand a high degree of allegiance. For example, the group's interests usually supersede those of the individual, even if they are conflicting with their own interest.

Several studies have explored the impact of Subjective Norm on the intention to use new facilities such as Open Banking services. Notably, many of these studies have reported a positive association between subjective norm and the behaviour intention. For instance, Ravi, Carr and Sagar (2007) show that Subjective Norm has a positive correlation with the intention to adopt retail banking services among consumers. Another study done about the acceptance of e-broker system has also confirms that Subjective Norm exerts a strong positive impact on the intention to make full use of the new system (Bhattacharjee, 2000). Selvanathan et al. (2017) in Malaysian context has analyse the factors affecting adoption of internet banking by bank consumers and the findings indicated that there is a positive relationship between Subjective Norms towards the adoption of internet banking.

Subjective Norms have been found to be more influential and significant among new and potential adopters (Nasir et al., 2015). This is because inexperienced and prospective adopters and users are deficient of self-experience and tend to depend on others' counsels and information before adopting an innovation. These findings suggest that subjective norm is indeed critical in shaping individuals' decisions regarding the adoption of the technology. Thus, in the context of Open Banking acceptance in Malaysia, it is hypothesized that subjective norm significantly influences the behaviour intention.

2.6.3 Perceived Behaviour Control

According to the Theory of Planned Behaviour, the perception of behavioural control drives an individual's intention to perform an action (Ajzen, 1991). According to some studies' contradictory findings, attitudes and social norms are significant but perceived behaviour control is not (Varma, 2018). Ajzen (1991) asserts that if someone knows very little about the behaviour in the question, or if the resources and requirements for that behaviour have changed, or if additional elements of the circumstances have evolved, the measurement's accuracy may be compromised. If this problem is found in a study, the variance in the behaviour intention in question might not be explained by the perceived control behaviour.

According to earlier research, perceived behavioural control's path coefficient is less than 0.1 and usually not significant (Ajzen, 2015; Madahi & Sukati, 2016; Varma, 2018; Palupi & Santoso, 2019). On the other hand, some research indicates that the behaviour intention is most strongly impacted by perceived behaviour control (Wang et al. 2018; Anggraini, 2019; Tsai et al. 2022).

2.6.4 Performance Expectancy

Prior study has shown that Performance Expectancy is a major characteristic of UTAUT, which helps researchers in understanding users' intentions to employ FinTech services (Yan et al., 2021; Alkhwalidi et al., 2022; Chan, et al., 2022). Performance Expectancy from the UTAUT by Venkatesh et al (2003) is defined as the degree to which technology will provide benefits to consumers in performing certain activities (Venkatesh et al., 2012). It is a key indicator of how likely users are to use technology (Yohanes et al., 2020). Hence, this implies that while some users perceive technology use as a means to enhance performance, others may place lower value on it due to their past experiences.

According to Venkatesh et al. (2003), this construct is conceptually similar to perceived usefulness in the Technology Acceptance Model (TAM) and relative advantage in Innovation Diffusion Theory (IDT). In IDT, proposed by Rogers (2003), relative advantage describes the extent to which an innovation is perceived as better than the existing practice or technology it replaces. Similarly, in the context of Open Banking, performance expectancy reflects consumers' belief that using Open Banking services can improve financial management, convenience, and overall banking experiences compared with traditional banking method (Chan et al., 2022). As a result, it indicates how consumers feel that Open Banking has improved their whole banking experience by making it more convenient.

Various study has been carried out using performance expectancy as the predictor of behaviour intention particularly in the technology-related use in banking industry. For example, Inder et al. (2022) stated that performance expectancy positively influences the intention to adopt Internet Banking in India. The direct relationship between performance expectancy and users' behavioural intentions towards FinTech services in Kuwait was

surveyed by Rabaa'i (2021), and a favourable relationship was found. However, they noted that in many developing countries, where institutions have yet to provide clear information on efficient, fast, and secure payment systems, the concept of FinTech services remains relatively unfamiliar. The study has been conducted to better understand the aspects that affect users' inclinations to use mobile wallet applications.

Performance expectancy in different circumstances though, may not explain intentional behaviour. For example, research conducted by Chen et al. (2023) on the use of contactless financial services in China during the COVID-19 pandemic found that performance expectancy did not significantly influence behavioural intention. One possible explanation is that, during the pandemic, many offline venues were closed, and people were not motivated by a desire to enhance their efficiency or technological skills. Instead, their primary goal was to maintain the basic flow of money necessary for daily life and work. This suggests that in crisis situations, like a pandemic, the motivation for using financial technology shifts from seeking improved performance to ensuring continuity and survival. As such, the usual influence of performance expectations becomes less relevant in explaining users' intentions.

2.6.5 Effort Expectancy

One of the predictor variables from the UTAUT is effort expectancy (Venkatesh et al., 2003). It is described as the extent to which tasks are made easier as a result of using new technology. Thus, effort expectancy in the context of Open Banking refers to how much effort is required or how difficult Open Banking is seen by the user to be.

In the UTAUT model, effort expectancy is expected to have a strong influence during the initial adoption phase, as users evaluate how easy the system is to use (Venkatesh et al., 2003). However, post-adoption, this influence tends to diminish (Rahi et al., 2019), likely because

users become more familiar with the system. As experience increases, the perceived effort required to use the technology decreases, making effort expectancy less relevant over time.

According to Venkatesh et al. (2003), effort expectancy has a significant effect on performance expectancy. When users believe that new technology is simple to use and does not require much effort, they are more likely to get the desired results (Zhou et al., 2010).

2.6.6 Financial Confidence

Knowledge of financial matters has become a critical skill due to the instability of global markets, asymmetric information in those markets, growing complexity of financial products, and the rapid expansion of financial technology (FinTech) (Philippas & Avdoulas, 2020). Furthermore, these recent advances have also fundamentally altered the necessity for everyone to be functionally literate and financially adept (Teravainen-Goff, 2019).

According to Sen (1993), the capability approach to evaluating a person's advantage focuses on assessing their actual ability to achieve various valuable functions as part of their life. Based on this theory, opportunity and ability to act are related to financial capabilities (Johnson & Sherraden, 2007). Sen (1993) postulated that financial capability originates from two sources: personal ability and external opportunity.

Studies explain that financial competence is a more comprehensive concept, with financial literacy serving as a fundamental component (Khan et al., 2022). Additionally, it covers financial inclusion and advice (Johnson & Sherraden, 2007). According to Sherraden (2013), financial advice falls into the second category, which is opportunity, while financial literacy falls into the first, which is ability. Financial inclusion also falls into the second category.

The Financial Capability Strategy for the UK defines 'financial capability' as encompassing the financial skills, knowledge, motivation and attitudes required to make good financial decisions and to achieve good financial wellbeing (Conlon, Peycheva & Landzaat, 2018). Financial capability has sometimes been understood simply as financial knowledge which the people's is understanding of financial concepts and products (Teravainen-Goff, 2019). Furthermore, Xiao et al. (2022) proposed that the ability to apply relevant financial knowledge and carry out desired financial actions is another definition of financial capability.

Despite that, financial capability is a broader concept that includes financial literacy, financial behaviour, and financial self-efficacy compared to financial literacy (Taylor, 2011; Serido et al., 2013). According to Palameta et al. (2016), financial literacy is defined as the knowledge, skills, and confidence required to make responsible financial decisions. "Knowledge" refers to an understanding of personal and broader financial matters, "skills" denote the ability to apply that financial knowledge in everyday life, and "confidence" involves having the self-assurance to make important decisions.

Financial literacy, as defined by the Organisation for Economic Cooperation and Development (OECD), includes not only knowledge and understanding of financial concepts and risks, but also the skills, motivation, and confidence to apply such knowledge and understanding (Lusardi, 2019). These will enable individuals to make effective decisions across a variety of financial contexts, improve individuals' and society's financial well-being, and enable participation in economic activities.

On the other hand, financial self-efficacy specifically refers to an individual's belief in their ability to effectively manage financial tasks and make sound financial decisions in different situations (Lown, 2011). It emphasises perceived capability and confidence in

handling financial challenges, including goal setting, problem-solving, and personal financial management.

In the context of Open Banking, higher levels of financial capability including literacy, behaviour, and self-efficacy. These may increase consumers' confidence in using digital financial services and influence their willingness to adopt Open Banking solutions.

Literature shows that there are two components of financial knowledge: objective financial knowledge and subjective financial knowledge (Antony & Thomas, 2023). Objective financial knowledge refers to actual financial knowledge assessed through financial literacy questions. According to Lusardi and Mitchell (2008), an individual's financial knowledge can be examined by considering the fundamental numerical capacity to perform interest rate calculations, awareness of inflation, and risk diversification. In other words, it assesses an individual's numeracy in performing compound interest calculations, comprehending inflation in the context of financial decision-making, and knowledge of stocks and risk diversification. On the other hand, subjective financial knowledge denotes an individual's self-assessed financial knowledge or also known as perceived financial knowledge (Brucks, 1985; Robb et al., 2012; Allgood & Walstad, 2013).

Subjective and objective financial knowledge are typically at contradiction with one another (Lusardi & Mitchell, 2011). For example, individuals with high objective financial knowledge may not necessarily have high subjective financial knowledge (Asaad, 2015; Hadar et al., 2013). Other than that, financial confidence or perceived financial knowledge has even been shown to be more strongly correlated with a large number of financial decisions than actual financial literacy (Allgood & Walstad, 2016; Anderson et al., 2017; Bannier & Neubert,

2016; Farrell et al., 2016; Kramer, 2016; Tang & Baker, 2016; Xiao et al., 2022; Antony & Thomas, 2023).

Studies reveal that Malaysians lack sufficient confidence in their financial knowledge and skills. One in every three Malaysians rated their financial knowledge as low; while one in ten Malaysians feel that they are not disciplined when it comes to managing their own finances (Financial Education Network, 2019).

Financial confidence refers to an individual's belief in their ability to manage their financial resources effectively. In the context of Open Banking acceptance in Malaysia, financial confidence could be an important factor in predicting an individual's willingness to adopt and use Open Banking services. Based on Kramer (2016), individuals who have greater confidence in their financial knowledge and skills tend to rely less on seeking financial advice. Therefore, it can be assumed that individuals who feel confident in their financial management skills may be more likely to see the benefits of Open Banking and feel comfortable using these services. On the other hand, individuals with low financial confidence may be more hesitant to try new financial tools and may be more likely to stick to traditional banking methods.

Financial confidence can be influenced by a variety of factors, including past experiences with financial management, education, and social norms. In the context of Open Banking, individuals who have had positive experiences with technology-based financial services in the past may feel more confident in their ability to use Open Banking services. Similarly, individuals who are familiar with the benefits of Open Banking may feel more confident in their ability to manage their finances effectively with these tools.

Financial confidence has been associated with healthy financial behaviours. Allgood and Walstad (2013) found that perceived financial knowledge (i.e., confidence) was a stronger predictor of positive credit card practices than actual financial knowledge, showing that credit card behaviours were healthiest among those with both types of knowledge. The impact of subjective financial knowledge on financial decisions was also demonstrated by Hadar et al. (2013) in the context of riskier investment options and enrolment in retirement saving plans with a higher level of subjective financial knowledge. Moreover, it is proven that the effect was stronger for subjective knowledge compared to objective knowledge among college students based on the study conducted by Xiao et al. (2014). The study found that higher levels of both subjective and objective knowledge were associated with a reduction in risky credit borrowing and payment behaviours.

Additionally, subjective financial knowledge (confidence) has been linked to better financial behaviours among young adults and soldiers (Henager & Cude, 2016; Carlson, et al., 2015). Findings from a nationally representative data set of US adults also revealed a positive relationship between subjective financial knowledge and financial behaviour (Tang & Baker, 2016). Similarly, the Children and Young People's Financial Capability Survey by the Money Advice Service (2017) found that children's confidence in managing money is associated with positive financial capability and financial behaviours. For example, they found that only nearly a quarter of the children who are not confident would choose to save every or most times when they have money compared with over half of those who are confident (Money Advice Service, 2017).

According to Palameta et al. (2016), financial confidence emerges as a stronger predictor than financial knowledge in determining outcomes related to day-to-day money management

and debt handling. Individuals with high levels of knowledge but low confidence are likely to face challenges in meeting financial obligations, paying bills on time, budgeting effectively, and managing debt. Conversely, those with lower levels of knowledge can achieve positive outcomes in these areas if they possess high levels of confidence. A significant finding from this study underscores that subjective financial literacy (financial confidence) appears more influential than objective financial competence (financial knowledge) in shaping both financial behaviours and subjective financial well-being.

On the other hand, Ramalho and Forte (2019) proposed that objective financial knowledge influences financial behaviour indirectly through the subjective financial knowledge. Nevertheless, Peters et al. (2019) in their study showed that subjective financial knowledge is a stronger predictor than objective financial knowledge when it comes to sound financial behaviour. Thus, it is proven that confidence is an important driver of behaviour in the financial domain (Farrell et al., 2016; Robb et al., 2015) and it is indicated that subjective financial knowledge alone is beneficial for financial outcomes.

Consistent with earlier research, the study conducted by Riitsalu and Murakas (2019) found that the association between financial well-being and subjective financial knowledge as opposed to actual financial knowledge was stronger. The study's conclusions indicate that a person's financial well-being is mostly unaffected by a higher score on objective financial knowledge (Riitsalu & Murakas, 2019). The other study conducted by Morris et al. (2022) also contributes to the existing body of literature by demonstrating that the construct with the greatest capacity to explain financial behaviour is financial confidence. This is followed by gender and, to a lesser extent, university courses in financial management or a similar

discipline. The study's primary findings emphasize the significance of financial confidence in persuading individuals to adopt wiser financial practices.

Furthermore, Lind et al. (2020) added that people with high subjective financial knowledge are less likely to avoid financial information. These will allow them to critically analyze their financial knowledge, which may lead to more prudent financial behaviour and increased financial well-being.

Interestingly, financial confidence has also been found to result in poor financial choices, particularly when it exceeds actual knowledge (Atlas et al., 2019). Overconfidence has been associated with various negative financial behaviours. Individuals with high subjective financial knowledge are less likely to seek financial advice (Kramer, 2016), tend to trade more but perform worse (Barber & Odean, 2000), and are more likely to start businesses that ultimately fails (Camerer & Lovallo, 1999).

According to Porto and Xiao (2016), consumers who exhibit overconfidence in their financial expertise are also more likely to require debt counselling, which is a sign of financial stress. Besides that, Asaad (2015) suggests that when knowledge is low, individuals with high confidence are more likely to engage in risky behaviour, whereas when knowledge is high, those with high confidence are less likely to do so. This illustrates that while confidence can be beneficial, excessive confidence can be detrimental.

Higher levels of Financial Confidence are associated with increased risk tolerance in financial behaviour (Blanchett et al., 2023). This confidence often leads individuals to allocate more to riskier assets like equities, potentially boosting retirement savings significantly. A study by Hadar et al. (2013) highlights that subjective knowledge significantly influences

individuals' propensity to choose risky investments, regardless of their objective knowledge. Participants with high subjective knowledge were notably more inclined to invest in risky funds compared to those with low subjective knowledge, despite receiving the same objective information about investment options. This underscores the critical role of perceived financial knowledge in investment decision-making.

Conversely, there is evidence that high confidence in financial knowledge can sometimes lead to less risky financial behaviours. References suggest that individuals with higher confidence tend to engage in more conservative financial practices, contrasting with those who exhibit lower confidence (Asaad, 2015). This dual effect of confidence both promoting risk tolerance in investments and caution in financial behaviours highlights its complex role in financial decision-making.

Mudzingiri et al. (2018) similarly concluded that financial literacy positively affects behaviour in the savings context and that the three-way interaction between financial literacy, risk aversion, and financial confidence significantly influences investors' savings behaviour. Furthermore, Ananda et al. (2024) explored the impact of financial literacy on savings behaviour, focusing on the moderating effects of financial confidence and risk aversion. Their study, based on primary data from 357 respondents, indicates that financial literacy positively influences savings behaviour. Moreover, it found that risk aversion significantly moderates the relationship between financial literacy and savings behaviour, with financial confidence playing a significant role in this interaction.

2.6.7 Risk

Open Banking presents new opportunities for consumers, offering improved tools for managing personal finances, fostering innovation, enhancing competitiveness, and expanding

access to financial services. However, as with any technological advancement or evolving market, these benefits are accompanied by inherent risks. The concept of perceived risk was first introduced in marketing literature by Bauer (1960), who posited that any consumer action carries potential consequences that cannot be predicted with complete certainty, some of which may be unfavourable. Subsequently, Cox and Rich (1964) defined perceived risk as the nature and extent of uncertainty experienced by consumers when evaluating a particular purchasing decision. Since then, perceived risk has become a widely recognised construct in consumer behaviour research, including studies on digital and online platforms (Hoover et al., 1978; Archer & Yuan, 2000; Ha, 2002).

Extensive research has examined the relationship between perceived risk and behavioural intention (Featherman & Pavlou, 2003; Lee, 2009; Mingxing et al., 2014; Thakur & Srivastav, 2014; Kerviler et al., 2016; Lafraxo et al., 2018; Cokins et al., 2020; Malik & Annuar, 2021). While many of these studies have treated perceived risk as a single construct, subsequent research guided by Cunningham's (1967) theoretical framework has decomposed it into distinct dimensions to provide a deeper understanding of its influence on consumer decision-making. Following this, Featherman and Pavlou (2003) elaborated seven facets of perceived risk. This includes performance, financial, time, psychological, social, privacy and overall risk.

The most relevant multifaceted risk proposed by Featherman and Pavlou (2003) in relation to Open Banking environment includes performance, financial and privacy risk. Performance risk is defined as the possibility of the service malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits. On the other hand, financial risk is the potential monetary loss associated with the use of the services

that include the recurring potential for financial loss due to fraud. Privacy risk refers to the potential loss of control over personal information, such as when personal or financial information is used without knowledge or permission of consumer.

According to Lee (2009), financial and privacy risks are interrelated, encompassing potential monetary loss and psychological distress resulting from privacy infringements, transaction errors, or fraudulent use of banking information. This study categorised perceived risk into five dimensions, financial, security, time, social, and performance risks to provide deeper insight into Internet banking adoption.

Romanova et al. (2018) identified key concerns associated with the introduction of Open Banking, including cost, service channels, privacy, security, risk, and quality and efficiency. Their study, conducted through an online questionnaire targeting employees of FinTech firms in Europe, highlighted the critical role of these factors in shaping perceptions of Open Banking.

On the other hand, Martins et al. (2014) integrated the UTAUT model with perceived risk to explain behavioural intention toward Internet banking in Portugal. Their findings revealed that perceived risk negatively influenced behavioural intention, with privacy, financial, time, and performance risks identified as the most significant dimensions, while social and psychological risks were less impactful.

In Malaysia, Shuhidan et al. (2017) extended the five-dimensional framework to explore young adults' perceptions of mobile banking risk. Based on a quantitative study of 384 smartphone users under the age of 35, performance risk and security risk were found to exert the strongest influence.

Nevertheless, several studies reported a negative relationship between perceived risk and behavioural intention (Mingxing et al., 2014; Thakur & Srivastava, 2014; Kerviler et al., 2016). Thakur and Srivastava (2014) further emphasised the need for robust legal and technological measures, such as secure credentials and continuous control system improvements, to protect confidential information in mobile payment services.

However, other studies have found insignificant or even positive effects between perceived risk and behaviour intention. Lafraxo et al. (2018) reported that perceived risk had no significant impact on mobile banking acceptance in Morocco, while Malik and Annuar (2021) found a statistically insignificant effect of perceived risk on e-wallet usage intentions among Malaysian youths. This result suggesting a potential generational differences in risk perception. Conversely, Cokins et al. (2020), in a study on technology adoption for online accounting platforms in Romania, identified a positive effect of perceived risk on usage intention, indicating that risk can sometimes be regarded as a motivating factor in adopting innovative technologies.

2.6.8 Trust

Considerable research has been carried out that focused on investigating the impact of Trust particularly in the context of e-commerce, each focusing on a different aspect of the multi-dimensional construct (Grabner-krauter & Kaluscha, 2003). Earlier studies distinguished between institutional and interpersonal trust. According to Giddens (1990), trust in the expert system or institutional trust appears to be more important than interpersonal trust. However, Giddens (1990) did not anticipate the role of digital technology in the organization of abstract trust production systems such as banking.

According to Luhmann's (1979) classical definition, system trust refers to an individual's confidence that an abstract system, in this context, financial institution, legal framework, or technological infrastructure will function as expected, independent of trust in specific individuals. Rather than relying on interpersonal relationships, system trust implies that the trustee believes the system operates reliably, predictably, and appropriately within its institutional boundaries. On the other hand, institution-based trust is the sociological component of trust and refers to an individual's thoughts of the institutional environment (McKnight et al., 2002).

One of the primary reasons consumers hesitate to engage in commercial transactions online is a lack of trust in digital service providers (Pavlou, 2003; Wu & Chen, 2005). Trusting beliefs and intentions toward a specific service are often shaped by users' perceptions of key functional features, such as security and privacy safeguards (Keen et al., 1999). In the context of Open Banking, trust in the institutions offering these services plays a pivotal role in users' willingness to adopt them. As McKnight et al. (2002) demonstrated in their study on e-commerce adoption, consumers become more comfortable sharing personal information, making purchases, and interacting with online vendors when those vendors demonstrate trustworthy behaviour. This trust, built on perceived institutional integrity and consistent positive experiences, encourages users to engage in online transactions with greater confidence. Similarly, in the Open Banking environment, trust towards the institutions can reduce perceived risks and foster greater acceptance of financial technologies (Araluze & Plaza, 2023).

Trust has often been studied alongside perceived risk, as researchers continue to debate which factor precedes the other and whether trust acts as an intervening or mediating variable

influencing behavioural intent (Pelaez et al., 2019). In conjunction, Hong and Cha (2013) examined the mediating role of trust in the relationship between perceived risk and purchase intention in an online context. Their findings revealed that trust mediated the effect of performance risk on purchase intention, highlighting the need for merchants to reduce perceived risk to strengthen consumer trust and, consequently, increase purchase intentions.

Similarly, Mangin et al. (2014) identified a positive moderating effect of trust on the relationship between attitude and intention to use online banking. Using an extended version of TAM, their study on Canadian consumers showed that trust enhanced this relationship, although its moderating influence did not extend to other behavioural factors. Supporting this line of research, Hansen et al. (2018) argued that higher trust in social technology activities leads to greater willingness to engage in transactions, reinforcing earlier findings by Ha and Stoel (2009) and Posey et al. (2010), who linked trust to increased online self-disclosure.

Further evidence comes from Stewart and Jurjens (2018), who confirmed that trust significantly impacts FinTech adoption by lowering consumers' perceived risk. Conducted in Germany, their study highlight trust as a key driver of acceptance. Similarly, Usman et al. (2020) found that trust moderated the relationship between perceived ease of use and attitude toward financial technology in Indonesia, specifically within Islamic philanthropy. Their results indicated that individuals with higher levels of trust maintained a positive attitude toward adoption despite perceiving the technology as less easy to use.

Collectively, these findings suggest that trust not only mitigates perceived risk but also strengthens attitudes and intentions toward adopting innovative financial services. Therefore, it can be assumed that trust is equally crucial in predicting the acceptance of Open Banking.

2.9 Conceptual Research Framework

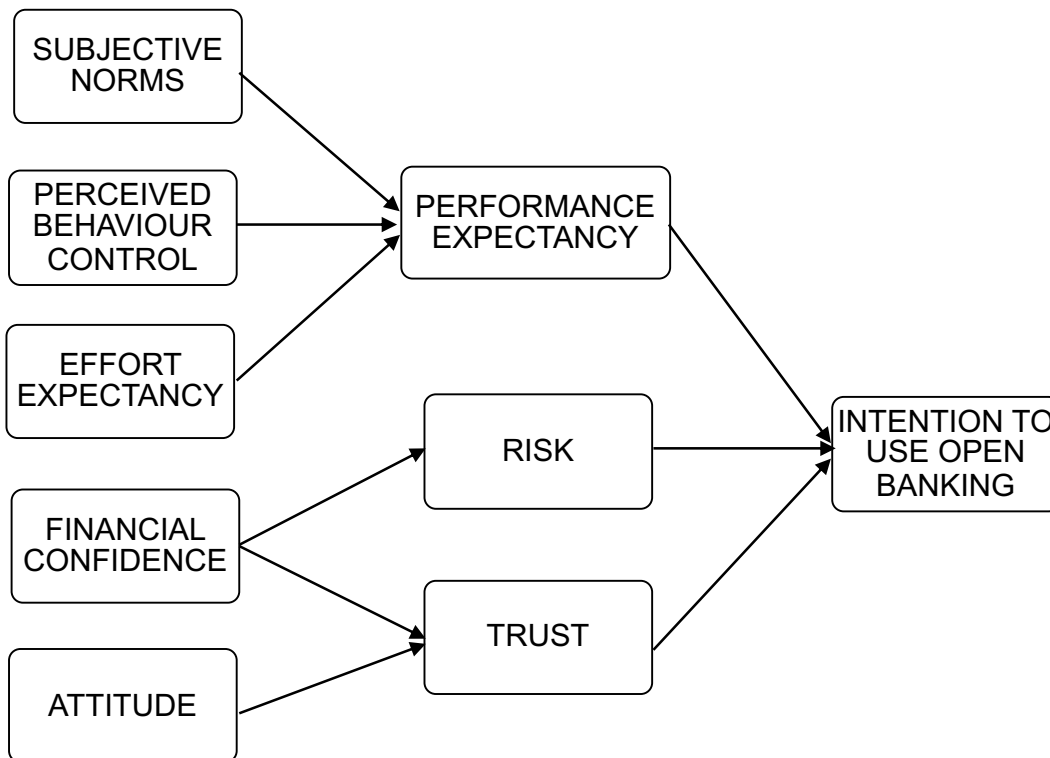


Figure 2.8.1: Conceptual research framework

Figure 2.8.1 illustrates the proposed research framework examining the determinants of consumer intention to adopt Open Banking services. Performance expectancy is conceptualised as being influenced by subjective norms, perceived behavioural control, and effort expectancy, reflecting the social, self-efficacy, and ease-of-use factors that shape consumers' expectations of the benefits of Open Banking.

Financial confidence is proposed to influence both risk and trust, such that consumers with higher financial confidence perceive lower risk and exhibit greater trust toward Open Banking providers. In addition, consumers' overall attitude toward Open Banking positively affects trust, indicating that favourable evaluations of the services strengthen confidence in their reliability and security towards Open Banking services.

Finally, performance expectancy, risk, and trust collectively influence intention to adopt Open Banking. High performance expectancy and greater trust increase the likelihood of adoption, while higher perceived risk reduces adoption intention. The framework thus integrates the technology adoption constructs with financial-specific factors to provide a holistic understanding of consumer decision-making in the context of Open Banking, particularly within the Malaysian Islamic banking environment.

2.10 Conclusion

This chapter has provided a comprehensive review of the key concepts, theoretical foundations, and empirical developments related to the acceptance of Open Banking. By tracing the evolution from internet and mobile banking literature to the emerging discourse on Open Banking, it has highlighted the continuity and distinctions in user adoption behaviour. The discussion on data-sharing and privacy concerns has further contextualized the relevance and significance of understanding Open Banking acceptance. Through a critical evaluation of behavioural intention theories and technology acceptance models, this chapter has established the theoretical basis for constructing the Open Banking Acceptance Model. This conceptual framework integrates key determinants influencing users' intention to adopt Open Banking services, forming the foundation for the subsequent empirical investigation in this study.

CHAPTER THREE

Research Methodology

3.1 Introduction

Following the previous chapter on review of literature, this chapter outlines the methodology employed in this study. It begins with a discussion of the philosophical assumptions that underpin the research approach, followed by an overview of the ethical considerations that guided the study. The chapter then details the three phases of the research design, providing a clear explanation of the qualitative and quantitative methods used to explore and validate the factors influencing consumer acceptance of Open Banking in Islamic banking institutions.

3.2 Philosophical Assumptions and Research Paradigm

A research philosophy is a set of beliefs and assumptions regarding the evolution of knowledge (Saunders, Lewis & Thornhill, 2019). Philosophical assumptions refer to fundamental beliefs and perspectives that underlie a particular approach, theory, or methodology. According to Creswell & Clark (2018), philosophical assumptions are the stances taken by researchers that provide the direction of the study, such as the researchers' view of reality (ontology), how the researchers comprehend of reality (epistemology), the significance of the position taken by the inquirer (axiology), and the techniques used in the study (method). Different areas of study and research may be guided by various philosophical assumptions. These assumptions are then frequently implemented in research using paradigm (Creswell & Clark, 2018).

According to Kuhn (1962), a research paradigm represents a set of shared beliefs and agreements among researchers regarding how problems should be identified and investigated. In simpler terms, a paradigm provides a conceptual framework that guides how research is approached and conducted. Therefore, it is essential to understand the underlying paradigm as it directly influences the selection of methodology and shapes the overall research design. Guba (1990) further explains that a research paradigm can be characterized by its ontology, epistemology, and methodology, which collectively define how reality is perceived, how knowledge is acquired, and how research is executed.

For this study, which adopts a mixed-methods approach, the chosen paradigm is pragmatism. Pragmatism is particularly suitable because it assumes that reality is dynamic, context-dependent, and continually reconstructed through experience and inquiry. Thus, the most appropriate research method is the one that best addresses the research problem and provides practical solutions. This perspective aligns with Peirce's (1878) assertion that ideas must be evaluated based on their practical consequences and usefulness in guiding action. Peirce (1878) emphasized that the meaning and truth of a concept are found in its conceivable practical consequences.

“Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then the whole of our conception of those effects is the whole of our conception of the object” (Peirce, 1878, p. 132).

He proposed the pragmatic maxim, arguing that clarity of thought emerges when we consider what difference a belief would make in practice. For Peirce, truth is what we would ultimately agree upon at the end of rigorous inquiry, assuming ideal conditions and unlimited

time. It is a regulative ideal, and belief becomes meaningful only when it leads to stable, actionable understanding.

Dewey, while building on Peirce, shifted the focus from ideal inquiry to real-world problem-solving (Dewey, 1938). His logic of inquiry frames research as an adaptive and iterative process that begins with a problematic situation and proceeds through hypothesis formation, evidence gathering, and testing. Dewey viewed ideas as instruments for resolving uncertainty, and truth as contextual and provisional, always subject to refinement based on experience. His approach supports a flexible, inquiry-driven methodology that values the integration of diverse forms of knowledge.

In relation, Dewey (1938), as cited in Kelly and Cordeiro (2020), argues that the significance and interpretation of views and factual information collected in research should be assessed by examining their practical implications. He refers to this as “warranted assertibility” (p. 9), meaning that knowledge claims are justified when they can be shown to work effectively in addressing real-world problems. This stance strengthens the rationale for adopting a pragmatic paradigm, as it emphasises practical outcomes which align closely with the aims of this study. Besides that, using a term that refers to a potential rather than an established fact reflects the understanding that the outcomes of specific inquiries are always provisional as part of an ongoing, evolving process of investigation and renewal.

As Dewey suggested, inquiry is a continuing process rather than a quest for final truths. Each specific study, including this one, contributes to a broader and ongoing effort to understand complex phenomena, such as consumer acceptance of Open Banking in Islamic Banking, which are shaped by evolving social, technological, and cultural conditions. This

perspective aligns with the view that knowledge is not static but is always being revised, refined, and renewed through further inquiry.

Thus, this study focuses on the Malaysian Open Banking environment, drawing on the regulatory framework established in the United Kingdom, which has served as a benchmark for Open Banking implementation globally, including in Malaysia. The research follows an exploratory sequential mixed-method approach, beginning with preliminary interviews with participants from the Open Banking industry to identify and confirm key variables for inclusion in the survey questionnaire. The questionnaire was subsequently distributed to consumers of Islamic banking in Malaysia. To gain deeper insights and enhance the robustness of the analysis, a larger and more diverse sample was later collected. Following the pragmatism paradigm, this study combines qualitative and quantitative methods to address the research objectives, ensuring comprehensive exploration and validation of the factors influencing consumer acceptance of Open Banking in Islamic banking institutions.

3.3 Ethical Considerations

Stringent ethical considerations were diligently implemented in both the qualitative (Study 1) and quantitative phases (Studies 2 and 3) of this study to protect the rights and well-being of all participants. The objectives of the research and what is required from them was explained to all participants to ensure they understood the meaning of informed consent. They were be informed on how the data was to be collected and that the responses would only be used for the purpose of the current research. An information sheet was provided to the participant to address the informed consent issue. For all three Studies they were told that were voluntary and they could withdraw ay anytime. In Study 1 (interviews), participants were given the opportunity to review their interview recordings or transcripts to ensure the information

aligned with their recollection, and they were allowed to correct any errors or clarify their responses as needed.

Besides that, no personal or financial information was collected to ensure participant confidentiality. The identity of participants was carefully protected in all phases, from data collection to publication. Participants were also reminded their participation is voluntary and that they have the right to withdraw from the process at any point. Hence, if a participant chooses to withdraw, they would not be pressured in any way to prevent them from ceasing to participate.

3.4 Research Objectives

The intent of this exploratory sequential mixed methods study is to explore the concept of Open Banking in Malaysia. This was to understand their concerns associated with the adoption intention of Open Banking in Malaysia. Hence, the need to explore the views and opinions of the regulators and practitioners with regard to Open Banking and specifically their understanding of the customers' intentions to use Open Banking.

The primary aim of this research is to explore the concept of Open Banking, particularly within the context of Islamic Banking in Malaysia. Open Banking regulations in the UK have become a global standard, influencing countries around the world, including Malaysia. While Malaysia is adopting a UK-based approach to Open Banking, there are distinct differences shaped by the country's religious and cultural context. This study aims to understand both the environment of Open Banking and the factors driving its adoption within the Malaysian Islamic Banking community.

This research will explore several key aspects related to Open Banking in Malaysia. First, it will investigate the concerns of regulators and practitioners regarding the development of Open Banking. This will include exploring the perspectives of key stakeholders, such as regulators, policymakers, and practitioners, on the challenges and opportunities associated with the development and implementation of Open Banking in the Malaysian context.

Second, the study will examine the factors influencing consumers' intention to adopt Open Banking in Malaysia. It will identify critical determinants, such as attitudes, perceived usefulness, and behavioural control, that shape consumers' willingness to engage with Open Banking services.

The research will also explore how the determining factors, such as trust, perceived risk, and performance expectancy, interact and influence consumers' intention to adopt Open Banking. This will include an examination of both the direct and indirect effects of these factors on consumer adoption intentions.

Finally, the study will investigate consumers' perceptions of the benefits and risks associated with Open Banking in Malaysia. This will focus on understanding their trust in the system, their perceived risks, and the anticipated benefits they associate with adopting Open Banking services.

3.5 Research Design

The research was conducted using a mixed-method approach comprising three stages. The first stage involved interviews with professionals associated with the banking and Open Banking sector in the UK, Malaysia, and Singapore. These interviews provided valuable insights that helped shape the research concepts for the study. Accordingly, Study 1 explores

the broader context of Open Banking, while Studies 2 and 3 focus specifically on the behaviour and acceptance of Open Banking within the Malaysian Islamic banking community.

3.6 Study 1: Qualitative Research

3.6.1 Research Design and Approach

For Study 1, it was essential to engage directly with regulators and practitioners within the banking sector to gain expert insight into the development and implementation of Open Banking in Malaysia. Participants were purposefully selected based on their professional roles and relevance to the Open Banking ecosystem. A total of four participants were interviewed, each representing a distinct area within the Open Banking landscape, such as regulatory compliance, digital innovation, Islamic finance, FinTech integration, and risk management.

Data collection was conducted through semi-structured interviews using a consistent set of open-ended questions posed to all participants. Interviews were held online via Microsoft Teams and were audio-recorded with participants' consent. These recordings were then transcribed verbatim for the purpose of analysis. Each participant received a copy of their transcript to review, allowing them to correct any inaccuracies and confirm their agreement with the content, a process that strengthened the credibility and ethical rigor of the research.

The analysis followed the Gioia Methodology (Gioia et al., 2010), which provides a structured and rigorous approach to qualitative research. This method is particularly well-suited for the present study, as it emphasizes the co-construction of meaning through both insider perspectives (participants lived experiences) and outsider interpretations

(researcher's analytical lens). The dual perspective ensures that findings are not only theoretically robust but also practically grounded.

According to Gioia et al. (2022), the primary aim of the Gioia methodology is to develop a grounded model that captures and explains the *how* and *why* behind the phenomenon under investigation. This model typically achieves three important outcomes. First, it affirms certain existing concepts and relationships, which is expected, if it did not it would suggest that previous research yielded no meaningful insights, an unlikely scenario. Second, it contributes to theory by extending current understanding, either by elaborating on or refining established knowledge. Third, and ideally, it offers fresh conceptualizations or introduces entirely new ways of seeing the phenomenon, thereby advancing theoretical development in a meaningful way.

The Gioia approach facilitates a systematic transition from raw qualitative data to conceptual insights to ensure the qualitative rigor (Gioia et al., 2012). It begins by identifying first-order concepts directly from participants' language, which are then synthesized into second-order themes reflecting theoretical constructs. This approach enables the development of a well-defined framework that captures the nuanced realities of Open Banking adoption in a complex setting involving technology, regulation, and Islamic finance.

While the methodology is primarily inductive, it also acknowledges the valuable role of existing literature and theory. This influence can be seen in several ways. First, an initial review of the literature helps identify key concepts and informs the development of a preliminary data structure, offering a guiding framework for the early stages of coding. As the inductive analysis unfolds, researchers may return to the literature to refine the emerging model, ensuring it resonates with or meaningfully extends established theoretical

perspectives. This iterative interplay between data and theory strengthens the study's overall theoretical contribution. Thus, deductive approach was employed alongside the Gioia method, allowing the analysis to be guided by predefined themes drawn from existing theories and literature. While the framework was informed by previous studies, the goal was to confirm, refine, or challenge these concepts through empirical evidence. This combination of deductive reasoning and grounded insight allowed the study to balance theoretical alignment with contextual specificity.

Besides that, to ensure the trustworthiness and validity of the findings, the study employed member checking and review. Transcripts and emerging interpretations were reviewed by the researcher's supervisory teams. This iterative process helped verify the relevancy of the interpretation of the findings.

By integrating the deductive approach with the Gioia methodology and drawing on multiple stakeholder perspectives, this study aims to produce a rich, credible, and theoretically informed account of the systemic and behavioural dimensions influencing Open Banking in Malaysia.

3.6.2 Research Instrument

The interview protocol developed has been reviewed by some academic experts to ensure that the guideline questions used in the interview are able to answer the research questions. Through reviewing the guidelines questions, the clarity and flow of the question can be ensured. Accordingly, the list of interview questions has been constructed based on the literature review focusing on answering the objectives of the research.

3.6.3 Validity in Research Instrument

Validity is a foundational concept in research that determines whether an instrument effectively measures what it is intended to measure. Ensuring validity is crucial because it directly impacts the accuracy and credibility of the research findings. Inaccurate measurements can lead to false conclusions, undermining the reliability of the study and its relevance to the research objectives. Validity is not a fixed trait but a process that is influenced by several factors, including the researcher's approach, the instrument's design, and how it is applied within the context of the study.

The importance of validity in qualitative research is particularly significant, as the findings are often based on subjective interpretation. Patton (1997) argues that validity is also determined by how well an instrument appears to measure what it is supposed to measure, commonly referred to as face validity. This type of validity emphasizes the intuitive alignment between the instrument's items and the construct being studied, making it an essential element of instrument development.

According to Miles, Huberman, and Saldana (2014), the validity and reliability of instruments in qualitative research depend largely on the researcher's skills and ability to manage and interpret the data effectively. In this context, the researcher's judgment and expertise play a critical role in ensuring that the instrument measures what it is meant to measure.

Furthermore, Creswell and Miller (2000) suggest that validity is shaped not only by the instrument itself but also by the researcher's perception of what constitutes validity within

the study. The researcher's assumptions and choices regarding the study's paradigm or framework will influence how validity is assessed and applied.

To enhance validity, the semi-structured questions has been validated through reviews and discussions with academic experts, ensuring that questions are clear, well-flowed, and accurately address the research objectives. This process allowed for refinement and validation of the questions, ensuring that they could gather the necessary data to achieve the research goals.

A formal pilot test of the interview questions was not conducted prior to the main data collection. Instead, the expert review and consultation process served as a mechanism for refining and validating the interview protocol. This approach helped ensure that the questions were appropriately designed to gather relevant data and address the research objectives. A consultation with experienced researchers or subject experts is widely recommended in qualitative research to enhance the credibility and appropriateness of interview protocols prior to data collection (Kallio et al., 2016).

3.6.4 Population and Sampling Technique

To examine consumers' intention to use Open Banking, participants were selected through industry contacts to provide in-depth insights into Open Banking acceptance. Four interviews were conducted with professionals working in banking across the United Kingdom, Malaysia, and Singapore. The purpose of these interviews was to inform the research concepts and provide contextual understanding beyond what is available in the existing literature. Although the number of interviews was small, this aligns with qualitative research precedents, where a

limited number of creatively and interpretively analyzed interviews can yield sufficient insights (Mason, 2012).

Participants were selected using convenience sampling, relying on recommendations from supervisors and industry colleagues to ensure that all participants possessed relevant expertise and experience in Open Banking and FinTech development. Table 1 provides an overview of their general roles, experience, and organisational affiliations. Participants from the UK and Singapore were included because these markets have matured Open Banking systems, and the professionals interviewed have extensive experience with regulatory frameworks, technology adoption, and user engagement strategies that are highly relevant to Malaysia’s emerging Open Banking ecosystem.

Table 3.6.4: Overview of Interview Participants

Participant	General Role / Experience	Organisation / Sector
Participant 1	Group Head, Model Validation	DBS Bank, Singapore.
Participant 2	CEO	Inbest.ai, UK.
Participant 3	Marketing Director	FinTech Scotland, UK.
Participant 4	Business Development Team Lead (SEA)	PolyDigi Tech Ltd, SEA.

These participants hold senior roles in their respective organisations, with responsibilities spanning strategic decision-making, regulatory compliance, technology deployment, and business development in Open Banking and financial technology initiatives. These participants offer comparative insights and expert perspectives on user behaviour, adoption challenges, and best practices that are highly relevant for understanding Open Banking in Malaysia. Their inclusion helps identify potential trends, user expectations, and adoption barriers that may emerge as Malaysia’s Open Banking ecosystem develops. While their responses do not directly represent the Malaysian population, they provide valuable contextual depth, enabling the study to interpret findings within both regional and global frameworks. Their input was instrumental in shaping the research concepts and

understanding cross-border practices that could inform the adoption of Open Banking in Malaysia.

3.6.5 Data Collection Process

Data collection has been done through online interview with the participants. The participants have been contacted through email to set the date and time of the appointment. After agreement has been made and the participants understand that the purpose of the interviews is for academic purpose, researcher make an online meeting with the participants. A total of four participants has been interviewed to get the information in answering the research questions through the interview protocol.

The interview protocol has been used as a guideline to ask the questions to the participants during the interview session. The interview session is recorded after gaining the permission from the participants with an agreement that the recording only be used by the researcher for the academic purpose. Before asking the questions, researcher begin with introduction of the purpose of the interview and explain the outcome that the researcher wish to gain from the interview to make a rapport between the researcher and the participants. An ice-breaker questions also has been asked at the beginning to ensure that participants can deliver the idea comfortably. Probing for the questions has been added to follow up and ask the participants to explain their ideas in more detail for clarity and to elaborate the more for in-depth understanding.

During the interview, researcher also record the information gained by making handwritten note besides the audio taping. The interviews were ended with the presenting of the souvenir for the participants as token of appreciation for the time spend by them in

answering the questions during the interview. Finally, a thank-you statement also was expressed to the participants for the information given.

3.6.6 Preparing Interview Transcript

After data collection period, researcher transcribe the recording from the interview. It is done by transforming the audio taping into a textual information. This step is immediately done after the interview session to ensure that no information was left behind. The interview transcript is store together with the audio taping for the purpose of recheck the information.

Since all the interviews were conducted in English, no translation was required. The transcripts were reviewed for accuracy and completeness, and the researcher cross-checked them with the original audio recordings to ensure that all information was captured correctly. This process helped maintain the integrity and reliability of the data collected.

3.6.7 Data Analysis

The data obtained from the interview conducted were analyzed by using qualitative data analysis method. All coding and categorization were conducted manually without utilizing software. The meaningful segments of text were highlighted, systematically assigned the initial codes, and grouped similar codes into categories. These categories were then examined iteratively to identify overarching themes. Throughout the process, the researcher maintained detailed notes and memos to document analytical decisions, reflections, and insights, providing transparency and rigor to the analysis.

This study followed a deductive approach, where the researcher began the analysis with predefined categories or themes based on existing theories and literature. The researcher

sought to confirm or refute these concepts through the data, testing the relevance and applicability of the theoretical framework within the context of the study. By using a deductive approach, the researcher applied specific theoretical expectations to guide the coding and interpretation process, ensuring that the findings were aligned with the research objectives.

Miles et al. (2014) outlined three key stages in qualitative data analysis. The first stage, data condensation, involves summarizing and organizing the data to focus on addressing the research questions. This process requires identifying codes that align with the study's themes, allowing the researcher to group and compare related pieces of information provided by participants. A clear understanding of the codes and their corresponding themes is essential to ensure accurate categorization and interpretation of the data.

The second stage is data display, which enables the researcher to organize the information in a structured manner to identify linkages and develop explanations of the findings. In this study, tables were used to visually present the connections between participants' responses.

The final stage is conclusion drawing and verification, which involves determining the significance of the identified themes and patterns and evaluating how they contribute to answering the research questions.

Building upon these stages of qualitative data analysis, this study further adopts the Gioia method to enhance analytical rigor and ensure interpretive depth. This research utilized the Gioia method as a guide, focusing on revelation, richness, and trustworthiness by integrating both insider and outsider perspectives. As demonstrated by Gioia et al. (2010),

engaging primary participants as insiders allows for a review of analysis results, while researchers as outsiders maintain confidentiality and objectivity. Thus, this study's findings will be reviewed by participants, supervisors, and academic peers to ensure trustworthiness.

3.7 Study 2: Quantitative Research

3.7.1 Research Design and Approach

For Study 2, an exploratory survey was carried out of Malaysian Islamic Bank Customers. The goal was to get deeper insight to the customers reaction to Open Banking in terms of their attitudes and perceptions. This study was primarily centred on university contacts in Malaysia. This was a convenience sample and utilized a cross-sectional design. The questionnaire was developed based on constructs and previous papers in the field of open banking. The questionnaire was created using Qualtrics with a sample of 118 participants.

While convenience sampling has its limitations particularly the potential for sampling bias and reduced generalisability due to non-random participants selection, this approach was considered appropriate for the present study. It enabled efficient access, given the time and resources constraint, to relevant respondent with experience digital and online banking services. The questionnaire collected information on participants' demographics, awareness and knowledge of Open Banking, perceptions and attitudes towards Open Banking, and concerns related to Open Banking. The data collected from the survey was then analysed using statistical methods to identify patterns and trends in the data. The data was analysed using standard regression methods using SPSS software.

Both Study 2 and Study 3 were included because they serve complementary purposes in understanding consumer acceptance of Open Banking. Study 2, which involved university

contacts in Malaysia, focused on a group with relatively high digital literacy and familiarity with financial technology. This sample is not fully representative of the broader Malaysian adult population, but this is not critical because the study's goal was to explore underlying mechanisms, test measurement scales, and assess construct validity among early adopters, participants who are most likely to influence wider adoption trends. The sample size of 118, though modest, is sufficient for these exploratory analyses, as it provides enough variation to validate scales, assess reliability, and identify preliminary trends, rather than to make population-level generalizations.

Study 3, in contrast, used Dataset 2 (n = 341) from a panel survey company, yielding a more demographically diverse sample. This allows the findings from Study 2 to be validated and tested for generalizability across key population segments most relevant to Islamic banking and Open Banking adoption. Considering all this, the two studies combine in-depth exploratory insights with broader confirmatory evidence, ensuring both psychometric rigor and external validity, and providing a robust foundation for understanding consumer adoption behaviour.

3.7.2 Research Instrument

This section will explain about the instrument used in measuring the variables understudied. These instruments were adapted from various source. The response scale used for each of the items is the 5-point Likert scale which indicate 1 for Strongly Disagree through 5 for Strongly Agree. The 5-point format provides a practical balance between response discrimination and ease of completion that make it particularly suitable for questionnaires with multiple measurement items.

Dawes (2008) indicates that scales within the five- to seven-point range achieve optimal reliability and validity, while additional response categories offer minimal gain. The 5-point scale data also perform similarly to seven- and ten-point scales in terms of variance, skewness, and suitability for advanced multivariate analyses such as Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). Although higher-point scales may offer slightly finer discrimination, they can increase respondent cognitive burden and reduce response consistency without providing an analytical advantage (Dawes, 2008). Therefore, the 5-point Likert scales was selected to balance measurement reliability, data quality, and respondent ease, ensuring the collection of reliable and interpretable data for this research.

Participants were provided with a brief explanation of Open Banking at the beginning of the questionnaire to ensure a basic level of understanding before answering the survey questions. In the introduction to the survey, Open Banking was defined as the sharing of personal financial information with authorised third-party providers through banking platforms and digital applications. The example of existing services and partnerships, such as banks applications and collaborations between Malaysian banks and digital payment platforms, were included to help respondent relate the concepts to the familiar financial services.

The study did not assume that respondents possessed advance or technical knowledge of Open Banking. Instead, it assumed only a general consumer level understanding of digital banking services. The short description and examples provided at the start of the questionnaire were intended to establish a common baseline of understanding among participants. This enables them to respond to the questions based on the definition and

context provided rather than requiring prior specialised knowledge of Open Banking or financial technologies as stated in Table 3.7.2.1 below.

Table 3.7.2.1: Measurement Instruments for Dependent and Independent Variables

Variable	Source	Items
Behaviour Intention	Adapted from prior research on behavioural intention	“Do you plan to use Open Banking?”
Attitude	Ajzen (1975), Theory of Planned Behaviour	1. “I believe that using Open Banking is a good thing” 2. “I believe that using Open Banking will give me benefits” 3. “I believe that using Open Banking will allow me to access better products and services”
Subjective Norms	Ajzen (1975), Theory of Planned Behaviour	1. “Those people who are important to me use Open Banking” 2. “I think that those people who are important to me would want me to use Open Banking” 3. “People whose opinions I value would prefer me to use Open Banking”
Effort Expectancy	Venkatesh et al. (2012), UTAUT2 Model	1. “I expect that my interaction with Open Banking would be clear and understandable” 2. “I expect that it would be easy for me to become skilful at using Open Banking” 3. “I expect that I would find Open Banking easy to use” 4. “I expect that learning to use Open Banking would be easy for me”
Financial Confidence	Robb & Woodyard (2011); Money and Pension Services (2018)	1. “I always know how much money I get in and how much I need to pay the bills each week/month” 2. “I am good at budgeting and managing my money” 3. “I am confident that I can sort out any money problems myself”
Risk	Rao & Goldsby (2009); Featherman & Pavlou	Performance Risk 1. “I believe that services obtained by sharing personal information will lead to poorer performance in general” 2. “I believe that services obtained by sharing personal information will not function at some level” 3. “I believe Open Banking might not perform well and create

Variable	Source	Items
	(2003); Dinev & Hart (2006)	<p>problems with my accounts”</p> <p>Financial Risk</p> <ol style="list-style-type: none"> 1. “I believe that sharing financial information will lead to potential fraud” 2. “I believe that sharing financial information will lead to financial loss for me” 3. “I believe the chance of losing money is high when I share personal financial information” <p>Perceived Privacy Risk</p> <ol style="list-style-type: none"> 1. “I believe that the risk of misusing personal information is high when sharing personal financial information” 2. “I believe losing control over personal information is high when sharing personal information” 3. “I believe my privacy is at greater risk when sharing personal information because my personal information would be used without my knowledge”
Performance Expectancy	Venkatesh et al. (2012), UTAUT2 Model	<ol style="list-style-type: none"> 1. “I expect to find Open Banking useful in my financial management” 2. “Using Open Banking would enable me to accomplish financial tasks more effectively” 3. “Using Open Banking would increase my efficiency in financial management” 4. “If I were to use Open Banking, then I would increase the chance of getting more competitive banking offers”
Perceived Behaviour Control	Ajzen (1975), Theory of Planned Behaviour	<ol style="list-style-type: none"> 1. “I would have much more control over using my personal financial data by using Open Banking” 2. “Given the resources, opportunities and knowledge it takes to use Open Banking, it would be easier for me to choose to share my personal financial data” 3. “I would be much more able to share my personal financial data because of the resources, opportunities and knowledge it takes to use Open Banking”
Trust	Self-developed	<ol style="list-style-type: none"> 1. “I trust banks with my personal financial data” 2. “I trust third parties with my personal financial data” 3. “I believe banks will share my personal financial data with third parties securely”

3.7.3 Validity Test

Two types of validity tests involved in this research i.e. content validity and construct validity. According to Zikmund (2003) content or face validity is a professional agreement on every item in the questionnaire. Each item in the instrument must be logically and accurately measure what is intended to measure. Construct validity is a measurement to confirm the related hypotheses generated from a theory based on the concept (Zikmund, 2003).

To test the content validity, the research instrument has been referred to supervisor and academicians to determine the validity of items consisted in the instrument. Furthermore, to perform construct validity, this study referred to results from factor analysis and regression analysis to justify the construction of conceptual framework in the study.

The scales used in this study to measure behavioural intention, and other variables are adopted from well-developed and validated scales in previous literature (e.g., Ajzen, 1991; Venkatesh et al., 2003). These scales have been widely applied in similar contexts, ensuring their reliability and validity in capturing the constructs of interest.

3.7.4 Sample Population

The population of the study in this research involved the Islamic bank's consumer in Malaysia. The respondent consists of individuals who are getting the products and services offered by Islamic banks. The respondents of the research were chosen by using convenience sampling method. Cross-sectional studies were done in this research as the individual were given the questionnaire only one person at one time.

The Study 2 performed factor analysis, correlation analysis and regression analysis tests. According to the Gay and Diehl (1996), to conduct a study of correlation, at least 30 samples are required to examine the existence of a relationship between the variables studied. Hair et al. (1998) explains that the general conditions for carrying out factors analysis is the number of samples should be at least five times for each of the variables studied. The study examined 9 variables, therefore, to carry out factor analysis, this study requires at least 45 samples. Given the number of samples used in the first quantitative study is 118, then sampling for this study has met the sampling requirements set by Gay and Diehl (1996) and Hair et al. (1998).

Study 2 used Dataset 1 (n = 118), drawn mainly from university contacts in Malaysia. While not fully representative of the Malaysian adult population, skewed toward younger, educated, and digitally literate individuals, it is appropriate for preliminary analyses, including scale validation, reliability assessment, and factor structure refinement.

3.7.5 Data Preparation

After data collection, data screening will be performed as part of the data preparation stage to ensure the data is clean and reliable for analysis. In the data screening activity, normality test, linearity and recognizing the missing data and outliers is done. Skewness and kurtosis test were used to test for the normality of the data while the scatter plot test was conducted to test for the data linearity. As the research is using four variable, Mahalanobis Distance Value test was conducted to test for the multivariate outliers.

3.7.6 Data Analysis and Interpretation

For Study 2, the analysis was conducted in a sequential manner to examine both patterns among participants and the relationships between the study variables by using Statistical Package for the Social Sciences (SPSS) version 29. Initially, cluster analysis was employed to segment participants based on their behavioural patterns, specifically their familiarity with Open Banking, usage of Open Banking, and usage of Internet Banking. Cluster analysis is a multivariate technique used to group cases into homogeneous clusters such that individuals within a cluster share similar characteristics, while clusters differ from each other (Hair et al., 2019; Jain, 2010). Hierarchical clustering using Ward's method and Euclidean distance was first applied to determine the optimal number of clusters, followed by k-means clustering to refine cluster membership. Crosstabulations of demographic variables, including age, gender, marital status, education level, and income were then used to profile each cluster, providing insight into the characteristics associated with different behavioural patterns.

Following the clustering, Confirmatory Factor Analysis (CFA) was conducted using Statistical Package for the Social Sciences (SPSS) Amos to validate the measurement model and confirm the dimensionality of constructs influencing consumers' intentions to share personal financial information with third parties in the context of Open Banking. CFA is a statistical technique that tests whether the observed variables reflect the theoretically expected latent constructs and is particularly appropriate when measurement instruments have been previously developed and operationalized (Byrne, 2016; Kline, 2016). Model fit indices, factor loadings, composite reliability, and average variance extracted (AVE) were assessed to ensure the constructs were valid and reliable.

To examine the relationships and effects between independent and dependent variables, parametric tests were applied. Pearson correlation analysis was conducted to assess the strength and direction of associations between variables. Pearson correlation coefficients (r) range from -1 to +1, where the sign indicates the direction of the relationship, and the magnitude indicates the strength, with 0 to 0.299 considered poor, 0.3 to 0.499 moderate, and 0.5 to 1 strong (Meyers et al., 2006).

Regression analysis was then used to determine the most influential factors affecting the dependent variable. According to Hair et al. (1998), if the sample is greater than 20, then the regression analysis can be carried out. The basic purpose is to run a regression analysis to determine the effect of independent variables in explaining the dependent variable. Regression coefficient (R^2) describes the change in the dependent variable as a result of the change of one unit of independent variables (Hair et al., 1998; Zikmund, 2003). In other words, R^2 is the percentage of the variance in the dependent variable (Y) that is explained by the independent variables (X).

Statistical significance testing for regression analysis involves testing the R squared (R^2), adjusted R^2 , the value of F , the Beta (β) and t-value (Hair et al., 1998). F value used to evaluate the significance of the model of study containing the dependent variable and independent variables. R^2 value describes the proportion of variance in the dependent variable that can be explained by the independent variables in the regression model. The t-value is used to determine whether an independent variable has a statistically significant effect on the dependent variable. The β (beta) coefficient indicates the strength and direction of the relationship between each independent variable and the dependent variable.

3.8 Study 3: Quantitative Research

3.8.1 Research Design and Approach

The objective of Study 3 was to gain insight from a wider demographic amongst Islamic banking consumer in Malaysia. The data was then collected through a panel survey company based in Southeast Asia. The use of a panel survey company enabled efficient access to a targeted sample of respondents who met the inclusion criteria for the study, including having an account with Islamic banks in Malaysia. Panel companies provide access to a pool of pre-screened participants, which facilitates faster data collection, higher response rates, and greater control over sample composition compared to open online recruitment methods.

The selected panel provider was chosen based on its reputation, the quality of its respondent profiling, and its ability to reach the relevant demographic group in Malaysia. This ensured that the sample was appropriate for examining the factors influencing the adoption Open Banking within the Malaysian Islamic banking context.

The respondents included in the study if they held an account with any Islamic banks in Malaysia without restriction to a specific institution. This criterion ensured that all participants had direct experience with Islamic banking services which is essential for providing an informed response toward Open Banking adoption in Islamic banking. While different Islamic banks may offer slightly different products and digital services, the study focuses on overall perceptions, intentions and attitudes toward Open Banking rather than comparing specific banks. Therefore, variations in offerings were not controlled for, but it was considered acceptable because the aim was to understand consumer acceptance at a sectoral level rather than at the level of individual banks.

The data was collected electronically through Qualtrics platform. Qualtrics was chosen as the survey platform because it allows for efficient collection and management of all data in a single system to ensure data integrity and ease of access. The platform also supports email-based survey invitations and reminders, which improve response rates and tracking. Additionally, using Qualtrics reduces administrative costs compared with paper-based or in-person surveys and provides a user-friendly interface that enhance the respondent experience. These features make it appropriate for collecting a structured survey data from digitally active participants.

The data was then analysed using structural equation modelling (SEM) to further investigate the consumers' intention to use Open Banking in Islamic banking in Malaysia. SEM allows for a simultaneous estimation of both measurement model, which assess the validity and reliability of the constructs and the structural model, which test the hypothesized relationship among constructs. SEM also supports theory testing and confirmation that enable rigorous examination of the applicability of technology acceptance constructs, including those from TPB, TAM and UTAUT in the Malaysian Islamic banking context. Additionally, SEM accounts for measurement error, test direct and indirect effects, and provides robust tools for evaluating model fit and explanatory power to ensure that the conceptual framework accurately captures the complex interactions influencing consumer behaviour in Open Banking.

3.8.2 Research Instrument

The instrument used for Study 3 is similar to Study 2 except for the Financial Confidence. The construct was expanded from three items used in Study 2 to include two additional items adapted from Robb & Woodyard (2011) stated in Table 3.8.2.1 below. While the original items

measured basic financial self-efficacy, such as budgeting, tracking income and expenses, and resolving money problems, the new items captured a broader financial capability, including managing day-to-day financial transactions and keeping up with the economic and financial news. The expansion was informed by findings in Study 2, which suggested that the initial items did not fully capture the range of financial competencies relevant to the study population. This expansion enhances the content validity of the construct by encompassing both practical money management skills and financial awareness. Furthermore, including these items improves reliability and robustness of the measure to enables SEM analysis to more accurately examine the influence of financial confidence on intention to use Open Banking among Malaysian Islamic banking consumers.

Table 3.8.2.1: Measurement Instruments for Financial Confidence Variables

Variable	Source	Response Scale	Items
Financial Confidence	Robb & Woodyard (2011)	5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree)	4. "I am good at dealing with day-to-day financial matters such as checking accounts, credit and debit cards, and tracking expenses" 5. "I regularly keep up with economic and financial news"

3.8.3 Validity Test

Two types of validity tests involved in this research i.e. content validity and construct validity. According to Zikmund (2003) content or face validity is a professional agreement on every item in the questionnaire. Each item in the instrument must be logically and accurately measure what is intended to measure. Construct validity is a measurement to confirm the related hypotheses generated from a theory based on the concept (Zikmund, 2003).

To test the content validity, the research instrument has been referred to supervisor and academicians to determine the validity of items consisted in the instrument. Furthermore, to perform construct validity, this study referred to results from factor analysis and regression analysis to justify the construction of conceptual framework in the study.

3.8.4 Sample Population

For Study 3, the distribution of the survey was conducted in collaboration with a panel survey company. This method allowed for the recruitment and data collection from a diverse group of participants who are already registered with the survey panel company. The participants were already registered in their system, which ensured a quicker, more efficient data collection process. This study concentrated on individual-based analysis. Therefore, the unit of analysis involves the consumers of Islamic bank in Malaysia. The respondent consists of individuals who are getting the products and services offered by Islamic banks.

The questionnaire was administered in English language with no translation provided. Participants were therefore limited to the respondents who were proficient in English to ensure that all participants could fully understand the questions and provide a reliable response. This criterion also means that the sample is likely to reflect digitally literate and more educated segments of Malaysian adult population, which consistent with the focus of the study. While it limits the generalisability of the findings to the entire Malaysian population, it enhances the validity and clarity of the collected data.

The respondents of the research were chosen by using convenience sampling method, though the panel company ensures the sample is segmented by specific demographic and behavioural criteria to align with the study's target population. The sample size for Study 3 is

set at 300 respondents; however, the collected response was able to achieve 341 respondents. A sample of 300 respondents is considered sufficient for conducting SEM analysis based on established guidelines in the literature (Kline, 2016; Hair et al., 2019).

SEM requires an adequate number of observations to produce a stable and reliable estimates particularly when the model involves multiple constructs and indicators. Kline (2016) recommend a minimum sample size of 200 for model of moderate complexity, while Hair et al. (2019) suggest a ratio of at least 10 respondents per estimated parameter as a general rule of thumb. With a sample of 341, this study meets the criteria to ensure a sufficient statistical power to estimate both the measurement and structural model, test hypothesized relationship and produce robust results.

This sample size was determined to be sufficient to provide reliable and statistically significant results, following established guidelines for survey research in the field. Cross-sectional studies were done in this research as the individual were given the questionnaire only one person at one time. Screening questions were included in the survey invitation to ensure that the respondents met the required criteria which is the banking institution that use whether the conventional, Islamic banking or both. If the respondent answered the conventional banking, the link to the next questions could not be access. Hence, only the Islamic banking consumer or both banking can answer the survey.

Study 3 employed Dataset 2 (n = 341), providing a more demographically diverse sample compared to Study 2. Respondents are fairly balanced by gender, mostly aged 18–44, married or middle-income, and with at least secondary education. While older adults, lower-educated, and extreme-income groups are underrepresented, this dataset effectively represents the

population segments most likely to adopt Islamic banking and Open Banking services, supporting meaningful generalization of findings.

3.8.5 Data Collection Process

The survey was distributed to eligible respondents via email invitations with a direct link to the online questionnaire. Respondents will complete the survey online, and a reminder were sent to those who had not yet completed the survey to ensure a high response rate. Throughout the data collection process, the panel survey company used their built-in quality control mechanisms to ensure the validity and reliability of the responses. This included monitoring response times and filtering out duplicate or inconsistent responses.

The data for this study were collected over a brief period, from 15th to 23rd June 2023. During this time, there was no major regulatory changes, banking announcements or seasonal events that could have substantially influence respondents' perception or behaviour regarding Open Banking. The relatively short collection period reduces the risk of external events affecting responses and help ensure consistency across participants. To further access potential timing effects, responses were examined for differences between early and late respondents, and no significant variation were found. This indicates that the timing of the survey completion did not bias the results and supports the reliability of the collected data.

Participants were not provided with any monetary or materials incentives for taking part in the study. The participation was entirely voluntary, and respondents was motivated by interest in the research topic and the opportunity to contribute to knowledge on Open Banking adoption. The absence of incentives helps ensure that responses reflect genuine perceptions and attitudes rather than being influenced by external rewards.

After the required number of responses were collected, the panel survey company closed the survey and provided the dataset a clean, organized Excel format. The data was then analyzed for insights regarding consumer behaviour and attitudes towards Open Banking in Islamic banking in Malaysia.

3.8.6 Data Preparation

After data collection, data screening was performed as part of the data preparation stage to ensure the data is clean and reliable for analysis. Data screening was the first stage to ensure the data was reliable to use. Whilst doing this stage, consideration was taken into account of the distributions of the data, exploring whether there may be outliers and assessing the number of missing values for each variable. All response were check for missing values and cases with substantial incomplete responses were excluded. The minor missing values were treated with mean computation for the continuous variable as appropriate for the analysis. All screening and cleaning procedure were conducted using Statistical Package for the Social Sciences (SPSS) Version 28 to ensure the final datasets were complete and consistent for subsequent statistical analysis. Although normality was examined, the ordinal nature of the collected data may pose issues, as the distance between response categories might not be equal. This may result in skewed distributions, meaning that standard parametric assumption could be partially violated, potentially affecting parameter estimates and significant test (Sideridis, Tsaousis & Ghamdi, 2023). However, SEM with Maximum Likelihood estimation is robust to moderate departures from normality, and bootstrapping was applied as a sensitivity check to ensure that the result remain reliable despite the ordinal nature of the data.

3.8.7 Data Analysis and Interpretation

For Study 3, the analysis was conducted to examine the structural relationships among constructs and to validate the theoretical model of consumer acceptance in Open Banking. The analysis followed a sequential approach, beginning with cluster analysis to segment participants based on their behavioural patterns. Specifically, the variables used were familiarity with Open Banking, usage of Open Banking, and usage of Internet Banking. Hierarchical clustering using Ward's method and Euclidean distance was first applied to determine the optimal number of clusters. The resulting dendrogram and agglomeration schedule informed the selection of the number of clusters.

Following this, k-means clustering was performed to assign participants to the final clusters, creating homogeneous groups with similar banking behaviours. To provide a demographic profile of each cluster, crosstabulations were conducted using age, gender, marital status, education level, and monthly income. This step provides context to the behavioural segmentation and supports a better understanding of participant characteristics (Hair et al, 2019; Jain, 2010).

After the clusters were identified, the study proceeded with Structural Equation Modelling (SEM) using SPSS AMOS. SEM was selected because of its ability to test complex theoretical models and its use of Maximum Likelihood estimation, which ensures robust and efficient parameter estimation (Hair et al., 2014). The SEM process was conducted in two stages. First, the Confirmatory Factor Analysis (CFA) was used to validate the measurement model, ensuring that observed indicators reliably represented their respective latent constructs. This step assessed construct reliability, convergent validity, and discriminant

validity, confirming that each construct was measured appropriately before testing structural relationships.

Second step is Path Analysis which is the Structural Model. After confirming the measurement model, the structural model was analyzed to test the hypothesized relationships among constructs, examining direct and indirect effects. Model fit indices such as CFI, TLI, RMSEA, and chi-square statistics were evaluated to determine the adequacy of the model (Hair et al., 2014).

3.9 Conclusion

This chapter has outlined the methodological framework underpinning this study, guided by a pragmatist research paradigm that values both the practical consequences of knowledge and methodological pluralism. The adoption of a mixed-methods design comprising a qualitative exploratory phase (Study 1) and two quantitative phases (Studies 2 and 3) reflects a deliberate effort to balance depth and breadth in understanding the phenomenon of Open Banking adoption among Islamic banking consumers in Malaysia.

The pragmatic orientation adopted here enabled flexible and context related choices in method selection, ensuring that the research questions rather than rigid philosophical commitments shaped the inquiry. Ethical principles were rigorously upheld throughout the study. This includes obtaining informed consent, ensuring voluntary participation, maintaining confidentiality and anonymity, securely storing data, and minimizing any potential harm. The issues of trustworthiness, validity, and transparency were further addressed through clear procedures in data collection and analysis.

This methodological foundation sets the stage for the analysis and interpretation of empirical findings in later chapters. However, before presenting those findings, it is essential to establish a clear theoretical and conceptual grounding. The next chapter presents the literature review, which explores key theories and previous research relevant to this study.

CHAPTER FOUR

Study 1: Qualitative Data

4.1 Introduction

This study aims to explore the factors influencing consumers' intention to use Open Banking services in Malaysia, with a particular focus on Islamic banking institutions. The qualitative stage of this research seeks to illuminate key elements such as trust, risk factors, regulatory frameworks, and the role of Open Banking in the development of FinTech within the Islamic banking context with the support from literature. Open banking, enabled by Application Programming Interfaces (APIs), has emerged as a transformative force in the financial sector, promoting inclusivity, transparency, and innovation. However, the adoption of Open Banking presents distinct challenges, including concerns about data security, privacy, and trust. This chapter will focus on the analysis of qualitative data collected from experts in the Open Banking industry aimed to offers rich insights into how these factors influence the decision to adopt Open Banking among the consumers.

While this study aims to understand consumer acceptance of Open Banking, expert interviews provide critical insights into industry perspectives on consumer behaviour. These experts, from banking, FinTech, and regulatory bodies play a key role in shaping Open Banking adoption through policy development, and risk management. Their perspectives help uncover potential gaps between industry expectations and actual consumer acceptance from survey conducted on next phase. This dual approach allows for a more comprehensive understanding, integrating both consumer sentiment (from survey data) and expert insights into the structural and regulatory factors influencing Open Banking adoption.

4.2 Data Organization

The data obtained from the semi-structured interviews were analysed by using a thematic method. In particular drawing on Gioia, Corley and Hamilton (2012), a structured approach to data analysis were adopted. Data collected were analysed by systematically organized into first order concept which is drawn from the direct quote by participants. These raw data were then analysed into a second order theme which is the interpretation conducted by researcher. The last step is the aggregate dimensions which provides a clear link between the raw data and the theoretical contribution. To minimize the risk of bias during this interpretive process, a discussion with supervisory team were employed to ensure consistency and alternative perspectives were considered.

4.3 Data Structuring Process

4.3.1 First-Order Concepts: Extracting Raw Data

The first stage of analysis involved reviewing interview transcripts and identifying meaningful statements from participants related to consumer acceptance of Open Banking. At this stage, responses were kept in their original wording to maintain authenticity. The key insights from the raw data were extracted without interpretation to ensure a comprehensive data set.

4.3.2 Second-Order Themes: Identifying Patterns and Meaning

Once first-order concepts were established, similar responses were grouped to identify patterns. This process involved categorizing statements that reflected shared perspectives, behaviours, or concerns regarding Open Banking. These second-order themes represented theoretical constructs rather than simple descriptions of the data.

For instance, responses related to Open Banking as a collaboration with FinTech, joint venture, more channel for bank to acquire consumers, business platform and trend are categorized under Open Banking concept. Other than that, response related to Open Banking serve as a tool in fostering the FinTech growth were categorized on the impact on development of FinTech. Besides that, concerns about data security, privacy, and potential financial risks were categorized under a broader theme of Perceived Risk in Open Banking. Similarly, statements reflecting value of Open Banking and ease of adoption were grouped under the Perceived Value of Open Banking. Furthermore, the response related to the confidence in using Open Banking services are categorized under Trust in Open Banking.

4.3.3 Aggregate Dimensions: Developing Higher-Level Themes

The final stage of the Gioia analysis involved clustering second-order themes into aggregate dimensions that capture the theoretical insights from the data. These dimensions provide a conceptual understanding of behaviour and attitudes toward Open Banking and link the data with the theories in literature. The data structuring process has been illustrated in the Table Data Structure in the Appendix A.

By applying the Gioia Methodology, this analysis systematically structured qualitative data to uncover key insights into the acceptance of Open Banking. The findings highlight the concept of Open Banking and significance of trust and risk considerations in shaping consumer behaviour. These insights contribute to the broader discussion on FinTech adoption and provide a foundation for further research and policy recommendations.

4.4 Data Interpretation

The following seven themes was clustered from the second-order theme to capture the theoretical insight from the data. These themes include the Open Banking Concept, Centrality of Application Programming Interfaces (API) to Open Banking, Perceived Value in Open Banking, Perceived Risk in Open Banking, Trust in Open Banking, the Impact on development of FinTech and Regulatory and Compliance Considerations. Each of the identified aggregate dimensions is discussed below with supporting participant quotes and interpretations. The participants are respectively coded as P1, P2, P3 and P4 to facilitate understanding.

4.4.1 Open Banking Concept

The financial services market is being disrupted by digital transformation, and API technology advancements are making data sharing faster and simpler. Furthermore, Open Banking legislation has accelerated digital transformation, highlighting the need for FinTech in the financial sector (Al-Naimi, et al., 2023). The changes in consumer behaviour also aided the emergence of more flexible and advance financial services firms, placing existing banks under competitive pressure.

The findings indicate that Open Banking is primarily perceived as a collaborative financial model, where banks and FinTech companies work together to expand market opportunities, enhance service delivery, and improve customer onboarding. Experts described Open Banking as a joint venture (P1) and a business model that facilitates partnerships between traditional banks and FinTech firms. This suggests that Open Banking is not merely a regulatory-driven initiative but a strategic move to create new financial ecosystems.

Participants emphasized the role of Open Banking in customer acquisition and business expansion, with statements such as, “The bank would like to have more customers” (P1) and “FinTech provides a platform for the bank” (P1). This reflects the broader industry trend of leveraging third-party digital platforms to reach a wider consumer base. The integration of FinTech solutions is seen as a way to enhance financial accessibility, streamline onboarding processes, and increase operational efficiency.

Beyond collaboration, experts highlighted Open Banking as a dynamic and evolving business model. According to Omarini (2020), Open Banking is viewed as an opportunities and threats for banks in the development of FinTech market throughout a re-intermediation process. It can be observed via the changes in the way banking is conducted, which requires banks to embrace completely new business models such as the platformization of the services. One participant noted, “It’s more on the dynamic business model and platforms for finance and banking” (P4), suggesting that Open Banking is driving a shift towards platform-based financial services, where banks operate not only as financial institutions but also as service enablers in a broader FinTech ecosystem. Another expert described it as, “opening opportunities to a disruptive spectrum in finance” (P4), reinforcing the view that Open Banking fosters financial innovation, competition, and digital transformation.

The findings suggest that Open Banking is perceived as more than just a regulatory requirement, it is a strategic business model that enables banks to collaborate, innovate, and expand their market reach. The emphasis on joint ventures, platform-based business models, and customer acquisition highlights Open Banking as a transformational approach rather than a simple technological advancement.

This aligns with previous studies that emphasize the four main drivers behind the concept of Open Banking are the business model change, client data sharing, incorporation of technological companies such as FinTechs and others, and regulation (Araluze & Plaza, 2022) and a tool for enhancing banking sector competitiveness through collaboration with FinTech firms (Gozman et al., 2018). The idea of Open Banking as a disruptive opportunity further supports existing research on platform economies in finance, where banks and FinTech firms co-develop financial services to create a more inclusive and customer-centric financial landscape (Chen, 2024).

4.4.2 Centrality of Application Programming Interfaces (API) to Open Banking

The open data or open APIs and the open innovation philosophies that applied in a retail banking industry by the practitioners has inspire the origin of Open Banking (Araluze & Plaza, 2022). This highlights the pivotal role of APIs in Open Banking services.

Building on the Introduction, the Experts provide insight into features of Open Banking that provide benefits for the banks and the customer. These benefits from arise from the potential collaboration between the third-party and Bank, through directly or indirectly sharing of information. P1 illustrated the use of Expedia platform as an example of the collaboration between banks and FinTech companies. The APIs was used by the banks to extract the information of the consumer in order to offer their products and services. It is explained through this statement below:

...because Expedia has the customer information, they will have their own system to select the customer...for bank. Internally, they also have assistant to select the

final customers. Right, so it's Expedia plays a role like additional channel for a Bank to connect with customers.

Furthermore, Open Banking is used by the banks as a channel for business expansion particularly on the aspect of collaboration with other market participants such as FinTech company. P1 stated:

There are many different channels as bank would like to have more customers...banks expand business; work with other vendor; FinTech company.

This example indicates how APIs allow banks and external platforms build collaborations, opening up new avenues for consumer interaction and allowing banks to expand through cooperative ecosystems. In a similar vein, P2 underlined the importance of APIs in the Open Banking ecosystem through this statement below:

You don't have to build the whole payment platform by your own. You can license payment platform and back your product through API. Open Banking minus the APIs in the same way a car run on wheels. So Open Banking run only by APIs.

The statement emphasizes the interconnected character of Open Banking, which makes it crucial in terms of industry structure. Banks and FinTech company can use APIs to integrate existing platforms, thereby outsourcing some tasks while concentrating on their core offers, as opposed to having to create every element of a payment system or service from the ground up. The analogy to an automobile with wheels highlights how essential APIs is to Open Banking's operation. This is supported by the statement by P3 below:

...speaking on API's and whether it was enabling the open banking. In essence, Open Banking is APIs.

The roles of traditional banks, FinTech companies, and third-party providers are being redefined by the banking ecosystem's reliance on external, interconnected services made possible via APIs. Open Banking makes it possible for more flexible, scalable business models and fosters cross-sector collaboration by lowering the need for proprietary infrastructure.

As a result, the statement suggests a more comprehensive shift in the industry, one in which companies need not to build their APIs from the scratch but may instead concentrate on enhancing value through partnerships and innovation made possible by APIs. Financial services that are more varied, adaptable, and customer-focused may result from this change.

However, P4 provides a different explanation regarding API as only tool and it depends on the people in the industry to ensure it successful use particularly in Malaysia. It can be seen through this statement:

API is just flat and plain business model...there are players who have a great API infrastructure for banking. But it is not adoptable because of the people inside the organization is not ready to adopt it because they are new. But if you know people inside are organization that could help to you, knock the door. It will be helpful. Again, it's goes back to the innovation in Malaysia is slow because of the close innovation, close policy and it cannot evolve. Even though we understand API will be a little bit risky at this moment. But you have to evolve. It has to be adopted. Otherwise, we will be lagging behind.

This remark from P4 emphasises a critical point about the human and organisational elements influencing API adoption in Malaysia's financial sector. According to P4, although APIs are strong tools in and of themselves, their usefulness primarily rests on how eagerly individuals inside organisations embrace and incorporate them. This claim draws attention to Malaysia's slow pace in innovation, which is fuelled by both internal oppositions to change and the country's relatively slow readiness to embrace new technologies.

The use of the terms "closed innovation" and "closed policy" implies that institutional or regulatory obstacles, as well as enterprises' lack of preparedness, have prevented APIs from being widely adopted. Malaysia is falling behind other regions in utilising the full potential of Open Banking and FinTech innovation because of these factors, which despite understanding of their potential result in a reluctance to move forward.

This raises an important issue which is while the technology may be available and functional, the real challenge lies in creating a conducive environment where stakeholders are open to experimentation and change. This hesitation could be attributed to several factors, including regulatory framework, cultural resistance and perceived risk. In some markets, regulations are not yet fully developed to support Open Banking, creating uncertainty among financial institutions about how to implement APIs securely and in compliance with legal requirements.

As P4 pointed out, even if the infrastructure is available, the willingness to adopt new technologies is limited by organizational culture and internal resistance to change. Employees, particularly in traditional banking institutions, may be hesitant to embrace new processes, especially if they are unfamiliar with the technology or perceive it as risky. Besides that, given that API integration is still relatively new and may involve risks related to data

privacy and security, financial institutions in Malaysia may be more conservative in their approach compared to regions where Open Banking has matured.

4.4.3 Perceived Value in Open Banking

Experts have outlined a few important factors that affect the consumers acceptance in using Open Banking aligned with literature. The way that consumers feel that Open Banking has benefit in improving their whole banking experience by making it more convenient is one of the reasons for adoption (Chan et al, 2022). Most of the informants stressed on the utility factor, risk factor and the convenience aspect of using Open Banking itself. People are inclined to use Open Banking if it provides practical benefits, especially in obtaining loans from banks.

P1 said:

...if I am a customer, I used the channel if I want to borrow money from bank.

Open Banking is the sharing of the personal data of the consumer for an exchange of getting the access to their banking data from various application without incurring the charges. This can be interpreted as consumers' benefit aspect. This could be inferred from the P2 statement below:

And for the consumer two things that you can, access your banking data whenever whatever from whatever product you want, not just the raw data, but services that can be built with your data. And second, you can pay with your bank from whatever application you don't have to use your visa to pay for your online purchases. You can pay directly with your bank, which is more secure, quicker and cheaper.

Similarly, P3 associates Open Banking as a way for creating services and products that can help the consumers specifically in the exchange of the banking data of the consumers. These new services and also innovation may come from third-party which is a strong feature in Open Banking. P3 stated that:

To allow new companies to launch and create new services and products to help customers outside of the normal banks and in essence what it does, it allows people to give access to their bank data to third parties.

This point of view emphasizes Open Banking's ability to enable third-party providers (TPPs) to provide bespoke solutions that meet unique consumer demands. FinTech companies, for example, can develop budgeting tools, personalized financial advice platforms, or automated savings apps that use consumer banking data to deliver real-time insights and recommendations. Similarly, financing comparison services and credit management systems can use this information to provide more competitive and personalized financial services.

In addition to giving customers more options, Open Banking fosters a competitive environment that promotes innovation in the sector by expanding the range of services available outside of traditional banks. However, these potentials are dependent on consumers' willingness to contribute their data, which necessitates clear articulation of the value proposition and assurances of privacy and security. Open Banking also provides as a mean for the bank to get a better understanding on the financial situations of the consumers in order to offer a wiser money management practice. Thus, benefiting consumers in term of financial management aspect. This could be inferred from P3 statement below:

We can also bring better quality data and if you couple that with whether it's artificial intelligence and machine learning, you can see how you could maybe get better understanding around people's financial situation to guide them through better money management.

On the other hand, Open Banking benefit from the business perspective is viewed as opportunity for the banks to provides a change to the business model in term of cost efficiencies and creativity in creating a new product and services by using the banking data of the consumers. This can be seen through P2 statement below:

You can spend this money and payments so you don't have to pay 2% to visa, so you can you know you can keep more money for yourself or sell your products cheaper to customers. And you can build new products and services for your customers using banking data.

Furthermore, Open Banking is used by the banks as a channel for business expansion particularly on the aspect of collaboration with other market participants such as FinTech company. P1 stated:

There are many different channels as bank would like to have more customers...banks expand business; work with other vendor; FinTech company.

P4 emphasized that Open Banking falls under the introducing a more dynamic business model specifically in the finance and banking industry. It shows in this statement:

It's more under dynamic business model and platforms for finance and banking...from a perspective of a business is more on opening opportunities to disruptive spectrum in finance...and securing the privacy of the customer.

This statement highlights Open Banking's revolutionary ability to disrupt existing business models by encouraging innovation and providing new market opportunities. However, P4's reference to "securing the privacy of the customer" implies that these potentials are conditional on addressing consumer concerns about data privacy and cybersecurity. Thus, Open Banking is more than just a technology revolution; it is a redefining of how financial services work, requiring a careful balance of innovation and consumer trust to fully realize its potential.

However, individuals are cautious about signing up and sharing data without clear utility or a balance between risk and reward. The friction in the user journey, including concerns about data security and convenience, plays a crucial role in consumer acceptance. According to Gencheva (2018), friction is perceived positively by those who prioritize privacy and security while early adopters, tech-savvy, and younger people value convenience and speed and may perceive friction negatively. P2 stated that people will use Open Banking as long as it gives them utilities with an exchange of sharing their data through this statement below:

...people will use Open Banking as long as it gives them utility. So, everything is utility based... the reward and the risk...how sure people when sharing the data or the friction that you have in the journey. So, you have to make the sharing data journey is easy...

Besides that, P4 also highlighted the critical role of the data in Open Banking. P4 stated that Open Banking serve as a banking platform which provides the products and services to consumers while sharing the data and data rights. However, the ultimate goals are to provide consumer with the value of convenience and integration through the service.

What they really want is the seamless experience of using banking platforms where they can, let's say for example they can manage the finance all on one platform.

P3 highlighted that while the adoption of Open Banking is still relatively low, it is growing. It is emphasized that there is a need for innovation in developing new products and services that provide tangible benefits to consumers, which can drive higher adoption, beyond just offering convenience in terms of user experience. P3 elaborated:

... better solutions (is needed) because using Open Banking is very easy, so it's not about the complexity because there's no complexity...Open Banking helps to do something, people need to do and want to do. And I think if we see more developments like that, Open Banking is going to become mainstream.

This statement highlighted that the ease of use of Open Banking is not the barrier to adoption. Instead, creating meaningful, practical solutions that address consumer need such as Inbest's benefit calculator is key to driving broader adoption. It is believed that as more valuable and accessible services emerge, Open Banking will transition from a niche offering to a mainstream tool in the financial sector.

However, a lack of understanding and awareness can be a major impediment to their adoption (Wewege et al., 2020). According to P4, there is recognition that mass consumers

may lack of awareness on the Open Banking services in the aspect of importance of the data particularly in Malaysia compared to corporate consumers. He said:

mass consumer...they are obviously know nothing about what is happening right now in open data sharing. They don't really read about it. Terms and agreements, conditions they just accept and agree. But from business, they do have a lot of insight because before they are sourcing the new solutions. There's a lot of discussion we'll be having in the meeting room. These are the people who have a strong barrier that we want to get to because they will do all the due diligence on our technical technological structure, what kind of architecture are we complying to, like say for example PSD2 policies.

The statement from P4 highlights the gap in understanding between mass consumers, who are still mostly ignorant of the implications of data sharing, and corporate consumers, who actively use Open Banking products and adhere to the regulations that underpin them. Unless there is more education on data rights, privacy, and the advantages of Open Banking, this lack of awareness among regular consumers may hinder the uptake of Open Banking services. Therefore, consumer acceptance of Open Banking is determined by the balance between utility and perceived risk, with practical benefits such as quicker access to financing, concern about data security and convenience in using the services.

4.4.4 Perceived Risk in Open Banking

Open Banking entails considerable risks and concerns, such as inappropriate utilisation of data and amplified difficulties for vulnerable consumers (Leong & Gardner, 2021). According to Featherman and Pavlou (2003), seven facets of perceived risk include performance, financial,

time, psychological, social, privacy and overall risk. However, according to experts, in the context of Open Banking, some of the prevalent risk can be emphasis in term of the financial, privacy and security of the data involved, and performance of the services offered.

Participants have highlight financial and credit risks, as well as concerns about the security and privacy of consumer data, including the potential for fraud and fake customers. As P1 stated that one of the risks associated with Open Banking is the fraud risk and having a face-to-face interaction is less risky compared to using Open Banking services. P1 said:

When I used the channel if I want to borrow money from bank, maybe I will hesitate...the reason is, if I want to borrow money from the bank, I would like to see person. I may have a many questions. I would like to consult the expert. I think it's easier for me to have a face-to-face communication.

Besides that, the level of protection on data itself is also becomes a concern. Wang and Deng (2020) stated that data breach which is the unintentional leaks or external attacks that expose sensitive information, including financial transactions and balances, bank account numbers or even online banking log-in credentials as one of the major areas of risk specifically in the Open Banking environment. P1 also mentioned a case of one FinTech companies that have been charged in the US market regarding the data breach issue. P1 said:

...FinTech company. I think it failed in the in the US exchange about the personal data protection...a new regulation, to protect the personal data. Because of this kind of FinTech company always use the customer data for their business objective...there are some frauds over something not positive by using a customer data. So definitely the data security risk is also important.

Furthermore, P2 stated that the risk of misuse of data, with the possibility of some Open Banking providers mishandling customer information may leads to regulatory backlash and customer distrust. This concern is not unjustified, as prior cases of data exploitation have shown the long-term impact such breaches might cause on customer confidence. For example, the Facebook-Cambridge Analytica scandal (Hinds et al.,2020), in which millions of users' personal data was taken and used without their consent, sparked widespread suspicion of social media platforms and led to the increased of governmental scrutiny.

Similarly, high-profile breaches in the financial sector, such as the 2017 Equifax data breach (Zhou & Huang, 2024), which exposed sensitive information about nearly 148 million people, have demonstrated how data mismanagement can erode consumer trust and result in significant financial and reputational losses for the organizations involved. P2 stated:

...misuse of data, some Open Banking providers may be a rough player, and they won't deal with customer data with the care it requires. And that will create a backlash from regulators and customers will distrust Open Banking.

However, P3 expressed a different opinion regarding the risk in Open Banking. While acknowledging the general risk of data breaches, P3 stress that these risks is not specific to Open Banking but pertains to data security in general. The discussion extends to the risks associated with the lack of adoption and innovation in Open Banking. P3 said:

Open Banking removed the risk by making sure that you can only share data with authorized companies and that it's done in a secured way without giving your credentials and the banks are upgrading their systems and creating more security for customer data. There are always risks and obviously any data can be breached,

but that's not to do with open banking. That has to do with data more generally. Any bank can be hacked despite the security...Risk is more on the lack of adoption of Open Banking or in innovation, and the lack of support Open Banking is going to be in the future.

According to Kottayil (2020), the APIs have the potential to improve transparency in banking, but they also increase the risk of cyberattacks on financial services firms due to their expanded boundaries. However, in the context of cybersecurity, personal data protection and risk management techniques are another crucial competitive advantage for banking services (Bratasanu, 2017). P4 relates the level of security that can be provided by the FinTech companies toward the collaboration between banks and the FinTech in Open Banking environment with the risk of cyberattack. P4 also mentioned about the risk of loss of customer due to the failure of the services delivered. It stated that:

...the start-up like to try and test and if the technology doesn't work, they need to mitigate the new solutions they need to mitigate to another firms that could provide them a new level of security. While in the meantime, if you are a bank trying to adopt new technology, there's cost of peoples moving from your banks to another. So, for the bank here is the cost of peoples and cost of failure.

In a nutshell, among the risk that are associated with the Open Banking environment are the lack of adoption and innovation in Open Banking, encompassing cybersecurity, the cost of failure, customer migration, and overall data security and privacy concerns.

4.4.5 Trust in Open Banking

The financial industry is frequently referred to as a trust business, as financial interactions rely on mutual confidence that institutions and intermediaries will fulfil their obligations (Arrow, 1972). According to Polasik and Kotkowski (2022), the important considerations for the success of Open Banking are gaining users' trust and having service providers respect their data. A high level of trust in banks also one of the predictors of the financial system's efficiency especially in FinTech and it depends relatively on the social influences of an individual (Lewan, 2018; Fungáčová et al., 2019).

Consumers are one of the most precious assets for banks in modern competitive banking environment. Consumers feel that their money is safe with a bank because they trust that their money will be held and that they will be free to withdraw it at any moment. Due to this vitality of trust, financial institutions are held to a greater compliance and control standards than other industries. Besides that, the significant of vulnerability of the Open Banking setting is the central situational feature of trust. Hence, trust is seen as another important element in the adoption of Open Banking.

Based on the interviews, trust in Open Banking is a nuanced concept. It is shaped by various factors such as utility, mistrust, friction in the user journey, and the overall purpose of data sharing. P1 stated that trust plays an important role in the adoption of Open Banking. It also mentioned about the trust level between generation particularly in older generation. The trust may be higher in younger generation in using Open Banking. P1 said:

...if I want to borrow money from bank right, I will not go to FinTech. I go to bank directly...because I am old.

Meanwhile, P2 emphasized on the linearity of the relationship between trust and Open Banking usage intention. It is stated that:

...it's not the linear, it's not the flat relationship. It is not trust or not trust, distrust and utility...even if I trust them, I still don't use it open market service because I don't have any utility. There might be a lending company I do not trust at all, but I need a loan. I really need a loan and the only way for applying for that is sharing my banking data, so I don't trust them, but I do share my banking data because I need the loan that gives me utility.

The participant emphasized the interplay of critical aspects influencing consumer decisions, such as trust, friction, and the utility gained from using a service. They noted that the importance of these characteristics is determined by the service's perceived value. For example, high utility may alleviate concerns about trust or friction. Conversely, if a service provides poor utility, even low friction and great trust may be insufficient to encourage people to use it. P2 stated:

There are more variables involved. There is trust, there is friction, or the utility you need, you get using that service.

This highlights the importance of a balanced approach: services with low perceived value are unlikely to flourish, regardless of trust levels or smooth experiences. Thus, consumer acceptability is dependent on maximizing the combined impacts of utility, trust, and friction. These variables interact dynamically, thus ignoring any of them may affect adoption rates. P2 further explained:

...if you have a lot of utility, maybe you don't need too much trust...the friction can be high, but still, I will find very hard because they have lots of utility in the service...you can have as much trust as you want, and the journey can have as little friction as you want. But I still won't use it. Because, I don't see any value, so you need to balance. Of course, if you have little utility and a lot of mistrust, you will never use it.

While acknowledging the role of trust in Open Banking adoption, it is emphasized that the primary determinant is the purpose of data sharing. P3 noted that trust might influence adoption decisions, but it is secondary to the perceived purpose of data usage. P3 stated:

There could be an element of that (trust)...and obviously some people will never be happy to share their bank account details and you won't be able to change their mind, I think. I think it all goes back to the purpose. Why do you ask data? Are you asking data to market products to me, therefore no, I'm not you know, really happy to give that to you? If you provide me with a service that will be helpful, then maybe I inclined to share my data.

This perspective highlights that consumers are more likely to share data when they perceive tangible benefits or value from the service offered, suggesting that clearly communicating the purpose and value of data sharing is critical for fostering trust and encouraging adoption. However, it is also important to note that the security of the data itself is important in garnering trust from the consumer to use Open Banking. According to Polasik and Kotkowski (2022), despite the role of trust as key aspect in the adoption of open banking, all stakeholders in the Open Banking ecosystem must prioritize data protection too. Furthermore, failure by any party in this ecosystem to abide this aspect, could negatively

impact the overall acceptance of the Open Banking services. This is supported by P3 in this statement below:

When it comes to that element of trusting the technology from a security perspective, I think maybe more work can be done with that aspect to make sure that people understand that it's completely safe. Or as safe as it can be.

Data security is a critical pillar for establishing confidence with consumers and retaining their loyalty (Bylykbashi, Fitamant, & Lee, 2021). This is supported by P4 which relate the situation with the use of a strong data encryption aspect in software application in the market. The trust will be enhanced by having a strong data security in the services itself as stated below:

...how we are transferring money from one bank to another using the TAC code is deemed to be weak. So now we are trying to do the end-to-end encryption solution like WhatsApp. So, when you open WhatsApp, you will see the end-to-end encryptions that provided nobody could break into the line of messages. So, we will provide the TAC code on WhatsApp and then you can authenticate the payment on platforms so that what we're trying to do and it's very new and people are not used to it. However, it will give a seamless experience like WhatsApp ...will give some kind of trust to customers.

Hence, the element of trust in Open Banking ecosystem is not stand alone in the relationship. The confidence in the security of personal and financial data is crucial for using Open Banking services. The consent of the consumer to share their data in Open Banking

environment is depends on the level of trust in the security system of the bank and its ability to protect the data.

4.4.6 Impact on Development of FinTech

Open Banking is one of the innovations that has promoted competitiveness and inclusiveness, especially in emerging markets and developing economies (Frost et al, 2021). P2 emphasizes innovation possibilities through Open Banking, such as creating new payment gateways, increasing turnover, reducing conversions, and developing new products and services. P2 said:

...innovation...you can build new payment gateways so you can create your turnover. You can increase your comparisons, reduce your costs and then you can build new products and services using banking data. So, you have a lot of new lending companies or new accountancy software packages that use exclusively banking data.

Other than that, P3 describes Open Banking impact as significant, with various sites using it to drive innovation, while acknowledging the need for improvements in data quality and standards.

...it's massive. I mean, a lot of different sites are using Open Banking aside of their services and whether it's sustainably while using it to help people give to charities whether it's DirectID using it to do credit checks, whether it's money dashboard we need for money management, so it's really, really created a lot of new innovation.

P3's perspective emphasizes the broad scope of Open Banking's impact across multiple sectors, while also highlighting areas for future improvement to ensure its long-term success. Another example of how Open Banking is changing the sector is the change in banks' perspectives from resistance to acceptance and the role of the regulator in promoting this transformation. P3 stated:

The impact on the financial services as a whole is also interesting because...banks could have been quite reluctant at the start by saying, well, we don't want to give away our data, but I think the regulator was very quick to say, well, it's not your data. It is the consumers data, and they should be able to share it with people who are regulated...for the industry, it's been transformational.

In addition, P4 also considers Open Banking a transformative force for the industry, suggesting it as a strategy to address the market, with the anticipation of a utilization of APIs and opportunities for data providers. P4 stated:

...both of them is like a moving along together parallel (Open Banking and FinTechs)...but this Open Banking system is actually providing opportunities for a lot of data providers. So basically, payment providers to posting the payments seamlessly...making people less dependent on cash. Well, for me there is not much difference from traditional banking system and now, but it's more on how you how the world is actually open to much more innovative thinker.

According to P4, it could possibly not be straightforward whether Open Banking differs from traditional banking systems from a practical perspective. The true shift is in the way financial services can develop and in the wider openness for innovative concepts. Open

Banking has results in more adaptable, effective, and user-friendly solutions and it is done through data exchange.

This claim emphasizes how crucial it is to view FinTech and Open Banking as components of a larger plan to improve service offerings and open new markets. According to P4, the mindset that encourages innovation and new business practices is just as important as the technology itself. Hence, Open Banking has been instrumental in fostering innovation and creating opportunities for more forward-thinking approaches in the financial sector.

P4 emphasized that Open Banking falls under the introducing a more dynamic business model specifically in the finance and banking industry. It shows in this statement:

It's more under dynamic business model and platforms for finance and banking...from a perspective of a business is more on opening opportunities to disruptive spectrum in finance...and securing the privacy of the customer.

This statement highlights Open Banking's revolutionary ability to disrupt existing business models by encouraging innovation and providing new market opportunities. However, P4's reference to "securing the privacy of the customer" implies that these potentials are conditional on addressing consumer concerns about data privacy and cybersecurity. Thus, Open Banking is more than just a technology revolution; it is a redefining of how financial services work, requiring a careful balance of innovation and consumer trust to fully realize its potential.

4.4.7 Regulatory Aspects in Open Banking

Regulation can be a useful tool for generating incentives to enhance innovation, economic development, and competition when formulated and handled effectively (Romanova et al, 2018). Several countries are increasingly following the European and UK models in adopting and launching Open Banking projects. It aimed to connect the Open Banking ecosystem worldwide (Seshika, 2021). However, the rate of regulatory development is varied depending on the countries. Every country has their own standard and guidelines in operating the Open Banking that are tailored to their own community.

According to Dinçkol, Ozcan and Zachariadis (2023), regulator-led standardization processes can modify the architectural configuration of an industry and interorganizational dynamics within by modularizing products and services, creation of new roles, and new interactions across different organizations. Therefore, regulator has greater role in ensuring the fairness and successfulness of the innovation in the market specifically in finance and banking industry. P1 stressed this aspect of fairness in this statement below:

The very important thing is a regulator should show the fairness. For example, if I want to make it a business, I can't consider gender. I can't consider nationality. So, I think regulator should focus more on the two.

Specifically, P1 emphasized that business practice should be free from discrimination based on gender or nationality and the regulator should actively monitor and enforce this standard. This statement highlight that regulatory oversight is fundamental not only for compliances but also for building trust and equity in the context of Open Banking.

On the other hand, P2 elaborated that innovation in the industry is affected by the regulation of the country itself. It is mentioned that the centre of the innovation in the Open Banking system itself is the regulator. P2 said:

Well, that the regulator has to regulate way more entities and has to regulate a way more complex ecosystem with many more connections. Everything regulation do, affects innovation. Regulation spark innovation, this is necessary to ensure trust in the system. So, it's embedded part in the system, it's part of ecosystem, it is part in the innovation. Move the companies who acquired data as per regulation. Bank responsible to only share the data with companies that are regulated. But if I'm related with FCA. Then I acquired this data, but I'm also responsible of reading the data in the manner agreed with regulator to manage this data.

P3 stressed on the crucial role of regulators in facilitating disruption and innovation. It is argued that regulators need to embrace and regulate Open Banking to ensure it is done in a way that fosters innovation while maintaining safety. This is highlighted in this statement below:

... Open Banking is a good example where the regulator has been proactive because it's an initiative that's been really driven by the regulator. If you speak digital disruption more widely. There are some instances where the regulator might be behind. Or maybe a bit ahead, it will depend on the technology...they need to be embracing it, regulating it, and making sure it's done in a way that can facilitate innovation.

According to Ammerman et al. (2023), Open Banking is a regulatory framework in which consumers can opt-in to sharing their financial data, typically stored by their bank, with authorized third parties, such as other banks or accredited financial technology companies. This regulatory framework is to protect the customers and the market. There is a question over its development within the UK and elsewhere. Similarly, P3 associate Open Banking with the regulatory framework particularly in the case of United Kingdom. It can be inferred through this statement below:

...Open Banking came about in the UK first and that inspired Europe to do something similar with something called the Payment Service Directive 2...but the UK was first and really it was pushed by the FinTech turbo, the regulator, the FCA to create more competition in the market.

In the statement above, P3 metaphorically describe the accelerated adoption and promotion of FinTech innovation driven by UK regulator, the Financial Conduct Authority as a “FinTech turbo”. It emphasized how regulatory encouragement can rapidly stimulate competition, innovation and the implementation of Open Banking.

According to Remolina (2019), regulation plays a crucial role in promoting Open Banking within the financial services industry, primarily by ensuring market efficiency and stability. Regulators focus on protecting market integrity and fostering competition, which can drive financial innovation. However, while regulatory frameworks emphasize efficiency and market development, they may overlook critical consumer concerns, particularly trust.

FinTech firms serve as key drivers of Open Banking by introducing technological innovations that enhance financial services, yet these innovations also introduce new risks

and uncertainties. While regulators prioritize market efficiency, the question of consumer trust remains a challenge, as the risks associated with Open Banking such as data security, privacy, and regulatory compliance may not always be fully addressed. Thus, although regulation supports the growth of Open Banking ecosystems, the extent to which it ensures consumer confidence and safeguards their interests remains a significant concern. The financial services businesses are increasingly interested in open APIs due to customer expectations, competition, and technological advancements. P4 stated that:

From my point of view, it always in this spectrum of open banking, it is the solution provider (FinTech companies). If we rely on the regulators, right now regulators are just regulating. They give us the freedom to innovate the open banking. So, to see the successful of Open Banking to mature, to flourish...is the solution providers (FinTech companies).

To sum up, regulation can be a useful tool for generating incentives to enhance innovation, economic development, and competition when formulated and handled effectively (Romanova et al, 2018). However, other parties involve in the Open Banking ecosystem also plays an importance role in ensuring the success of the implementation of the services.

4.5 Conclusion

This chapter discussed on the analysis of qualitative data collected through a semi-structured interviews aimed to explore key factors influencing the adoption of Open Banking among consumers. Although this study focuses on consumer acceptance of Open Banking, expert interviews provide essential insights into how industry stakeholders perceive and shape

consumer behaviour. Experts from banking, FinTech, and regulatory sectors influence Open Banking adoption through system design, policy development, and risk management. Their perspectives contribute to key themes in this study, particularly in understanding the Open Banking concept, its impact on FinTech development, API integration, risk and trust considerations, and regulatory aspects.

Drawing from existing literature and the insights derived from the interview responses, a set of research concept was developed to guide the next phase of the study. The findings from the qualitative analysis have provided valuable context and a deeper understanding of consumer perceptions regarding Open Banking by comparing expert insights with consumer data. This approach helps identify alignment or discrepancies between industry expectations and actual consumer perspectives. These insights form the foundation for the development of a survey questionnaire aimed at quantitatively assessing the acceptance of Open Banking among consumers themselves. Ultimately, the qualitative data not only contributes to shaping the research framework for the quantitative phase but also provides a richer perspective on the adoption of Open Banking.

CHAPTER FIVE

Study 2: Quantitative Study 1

5.1 Introduction

This chapter focus on the initial sample of quantitative data collected in the second stage of the research following from the interviews. This initial sample were collected from Malaysian population. The data analysis aimed to explore the relationships within the data based on previous work on acceptance of technology in Open Banking as discussed in the literature review and arising from the interviews. Previously, little attention had been paid to the concept of risk in the models for acceptance. Therefore, initial examination of the concept based on data were presented in this chapter. The underlying theory was discussed in literature, and the extension focuses on the role of risk in the relationships.

5.2 Methodology

The sample was obtained via a convenience sample. It was obtained by asking colleagues based in Malaysia to distribute a set of survey questionnaire comprised of the concepts discussed in the literature and from the interviews conducted. The initial analysis goal was to gain insight to the nature of the sample, through response rate, frequencies and percentage of the response in the questionnaires distributed, see Appendix B for Questionnaire.

Cluster Analysis was carried out on variables following the descriptive statistics on individual questions to gain understanding of the population and its behaviour. A Factor Analyses was carried on each of the implied constructs to explore relationship between the independent variables and their implied factors. A reliability analysis using Cronbach alpha measured the appropriateness of the factors and whether some of the questions should be

eliminated from the factors. Next, Pearson Correlation was used to determine the relationship between the independent variables and dependent variables. In addition, to examine the influence of both independent and dependent variables, this study used Multiple Regression analysis.

5.3 Profile of the Respondents

This section shows the background of the demographic data of the respondents who participated in the current study which is the initial sample, which is essential and useful aspects to understand the data segmentation. The demographic variables are including gender, age, marital status, level of education and income. Table 5.3.1 presents the profile of respondents in this study.

From Table 5.3.1, we can see the distribution of the questionnaires among the respondents are almost equal in gender. It indicates 56.8% of female while another 43.2% is male. Compared with Malaysia's national population, where males slightly outnumber females (52.4% male vs. 47.6% female) according to the Department of Statistics Malaysia (DOSM) (2025), females are somewhat overrepresented in the sample.

There are different levels of highest educational level among the respondents. The largest age group was respondents aged 25 to 34 years, and the smallest age group was respondents aged 18 – 24 years old, each group making up 49.2 and 8.5 percent of the sample, respectively. This indicates an overrepresentation of younger adults, who are typically early adopters of digital financial services, and underrepresentation of older adults compared with the national age distribution (DOSM, 2025).

Table 5.3.1: Profile of the respondents

Variable	Categories	N	% (Sample)	National Comparison & Sample Representation
Gender	Male	51	43.2	Underrepresented compared to national population (~52.4% male, DOSM 2025).
	Female	67	56.8	Overrepresented compared to national population (~47.6% female, DOSM 2025).
Age	18–24	10	8.5	Slightly underrepresented relative to broader young adult cohort; national working-age 15–64 ~70.4%, 65+ ~8.0% (DOSM 2025).
	25–34	58	49.2	Highly overrepresented; much larger share than corresponding national age segment (DOSM 2025).
	35–44	25	21.2	Slightly overrepresented compared with national working-age proportion (DOSM 2025).
	45–54	14	11.9	Similar to national distribution for mid-aged adults (DOSM 2025).
	>55	11	9.3	Older adults underrepresented compared with 65+ population (~8% nationally, DOSM 2025).
Marital Status	Married	89	75.4	Overrepresented compared to national adult population (~55.5% married, DOSM 2020).
	Widowed	1	0.8	Underrepresented (national ~3.8%, DOSM 2020).
	Divorced	2	1.7	Roughly similar to national proportion (~1.6%, DOSM 2020).
	Never Married	26	22.0	Underrepresented (national ~34.0%, DOSM 2020).
Education	Less than high school	4	3.4	Underrepresented; lower education levels are larger in national population (DOSM).
	High school graduate	18	15.3	Underrepresented relative to national secondary education share (DOSM).
	Bachelor’s degree	63	53.4	Strongly overrepresented; national degree holders ~22.3% (DOSM).
	Master’s degree	21	17.8	Overrepresented; postgraduate attainment nationally much lower (DOSM).
	Professional certificate	3	2.5	Slightly above national share; no direct DOSM benchmark.
	Doctorate	8	6.8	Highly overrepresented; very small proportion nationally (DOSM).
	Post-doctorate	1	0.8	Overrepresented; negligible share in national population (DOSM).
Income	<RM2,000	36	30.5	Slightly underrepresented among lower-income households; national median income RM7,017 (DOSM 2024).
	RM2,000–RM3,999	25	21.2	Middle-lower income represented in line with national distribution (DOSM 2024).
	RM4,000–RM5,999	26	22.0	Mid-income respondents aligned with national median income (DOSM 2024).
	RM6,000–RM7,999	9	7.6	Slightly underrepresented near national median income (DOSM 2024).
	>RM8,000	22	18.6	Higher-income respondents underrepresented relative to national upper quintiles (DOSM 2024).

The proportion of the respondents who were married was 75.4 percent, with smaller proportions widowed (0.8%), divorced (1.7%), or never married (22.0%). This proportion of married respondents is higher than national estimates, which typically report 54–60% of adults as married (DOSM, 2024).

Table 5.3.1 also indicates that 53.4% of the respondents are bachelor's degree holders which is 63 respondents. 21 respondents are master's degree holders with 17.8% followed by 18 (15.3%) high school graduates, 8(6.8%) of the respondents have a doctorate and 4 (3.4%) of the respondents have less than high school level of education. Compared with national data, this indicates that the sample is more highly educated than the general population (DOSM, 2024).

The table above also indicates various income levels of respondents. 30.5% (36) of the respondents earned less than RM2,000 followed by 22.0% (26) respondents earned between RM4,000 and RM5,999. There are 21.2% (25) respondents earned between RM2,000 and RM3,999 while another 18.6% (22) of the respondents earned more than RM8,000. Relative to the national median household income of RM7,017, middle-income respondents are well represented, whereas both lower- and higher-income groups are somewhat underrepresented (DOSM, 2024).

Considering all this, while the sample provides a reasonable cross-section of Malaysian adults most likely to engage with Islamic banking and adopt Open Banking services which particularly younger, educated, and married individuals, it limits the generalisability the findings to the broader population due to the underrepresentation of older adults, less-educated individuals, and those in the lowest and highest income brackets. However, this

composition is appropriate for the study’s objectives, which focus on examining relationships and behavioural patterns rather than producing population-level estimates.

5.4 Descriptive Analysis on Open Banking (familiarity, usage and intention)

The descriptive analysis has been conducted to examine respondents’ familiarity with, usage of, and intention to adopt Open Banking, providing a foundational understanding of consumer awareness, engagement, and potential adoption patterns. Table 5.4.1 indicate that participants reported a moderate level of familiarity with Open Banking, with a mean score of 2.70 (SD = 1.07) on the 5-point scale. This suggests that while some respondents are aware of Open Banking, a substantial proportion remains relatively unfamiliar with its concepts or services.

The usage of Open Banking shows a slightly higher mean of 3.49 (SD = 1.27), reflecting moderate engagement with these services, although variability is evident, as indicated by the higher standard deviation. Respondents’ intention to use Open Banking is also moderate, with a mean of 3.58 (SD = 0.99), suggesting a generally positive inclination toward adopting Open Banking services in the future, even if familiarity remains limited. Overall, the descriptive analysis highlights a gap between familiarity and intention or usage, indicating that while many respondents are not fully familiar with Open Banking, those who are aware tend to show moderate usage and a positive intention to adopt it.

Table 5.4.1: Descriptive Analysis on Open Banking (familiarity, usage and intention)

Items	N	Minimum	Maximum	Mean	Std. Deviation
Familiarity on Open Banking	118	1.00	5.00	2.7034	1.07265
Usage of Open Banking	118	1.00	5.00	3.4915	1.26590
Intention to Use Open Banking	118	1.00	5.00	3.5847	.98992

In this study, all constructs were measured using 5-point Likert scales. Although Likert data are technically ordinal, it is common practice in social science research to treat such

scales as approximately interval-level data, especially when they contain five or more points and the data distribution is reasonably symmetric (Dawes, 2008). According to Dawes (2008), research comparing different Likert-type formats has shown that 5-point and 7-point scales produce very similar mean scores and distributional characteristics, supporting the use of means and standard deviations for descriptive and parametric analyses. The mean provides a more detail understanding of central tendency than the median because it reflects the relative magnitude of all responses. For example, if most respondents report moderate familiarity (3) but some report very high usage (5), the mean captures this higher usage and shifts accordingly, whereas the median remains unchanged.

Using the mean and standard deviation also allows for comparison across constructs and items, facilitating the identification of patterns such as whether respondents generally exhibit moderate or high intention to adopt Open Banking and which constructs show greater variability. While it is acknowledged that the mean assumes equal spacing between response categories and that the median would be a stricter ordinal measure, the approach provides a richer, more interpretable summary of the data and supports subsequent parametric analyses, including correlations and regression.

5.5 Cluster Analysis on Demographic and Banking Behaviour Segmentation

A cluster analysis was conducted to explore the patterns in participant behaviour regarding Open Banking. The cluster analysis conducted focuses specifically on familiarity with Open Banking, usage of Open Banking and internet banking usage as the primary variables to segment respondents. The purpose of including these three variables is to capture both awareness and engagement with Open Banking while accounting for respondents' general digital banking behaviour. The analysis directly captures both cognitive awareness

(familiarity) and behavioural engagement (usage), which are the core dimensions of adoption behaviour in technology acceptance research (Venkatesh et al., 2003; Davis, 1989).

On the other hand, internet banking usage variable may serve as a proxy for general digital financial literacy and comfort with online financial services. Including internet banking usage helps distinguish respondents who are comfortable with digital financial platforms but may have low awareness or usage of Open Banking specifically. For example, a respondent might use internet banking frequently but have limited knowledge of Open Banking features, representing a potential user segment that could be converted through targeted education. By clustering on these three variables, the analysis identifies meaningful segments.

The clustering analysis commenced with hierarchical clustering using Ward's method, employing Euclidean distance as the measure of similarity. Ward's method was chosen over alternative linkage techniques because it produces clusters that are more balanced in size and easier to interpret. In contrast to single linkage, which can result in "chained" clusters, or complete linkage, which tends to form overly compact clusters, Ward's method focuses on minimizing within-cluster variance, thereby generating highly homogeneous groups (Everitt et al., 2011; Aldenderfer & Blashfield, 1984; Ward, 1963). As highlighted by Everitt et al. (2011), Ward's method "creates groups which are highly homogeneous by optimizing the minimum variance, or error sum of squares (ESS), within clusters" (p.110).

Hierarchical clustering was first employed to determine the optimal number of clusters, as it allows for both visual and statistical identification of natural groupings within the data. The variables selected for clustering Familiarity with Open Banking, Usage of Open Banking, and Usage of Internet Banking were chosen because they directly capture participants' engagement with and willingness to adopt digital banking services. These

variables were treated as continuous and standardized prior to clustering to ensure that differences in scale did not bias the results.

The agglomeration schedule from hierarchical clustering was carefully examined to identify the point at which combining clusters would result in a significant increase in within-cluster variance, thereby indicating the most appropriate number of clusters. After establishing the optimal cluster solution from the dendrogram and agglomeration schedule, which is three clusters, k-means clustering was applied to assign respondents to clusters. K-means clustering was employed due to its effectiveness in refining cluster membership and enhancing the homogeneity within each cluster (Everitt et al., 2011).

Finally, the resulting clusters were profiled using crosstabulations of key demographic variables, including age, gender, marital status, education level, and monthly income. Demographic and other behavioural variables such as gender, age, educational level, marital status and income were not used in the clustering process to avoid confounding the engagement-based segmentation. Instead, these variables are used post hoc to profile and interpret the clusters, providing insights into who the users are and how targeted strategies can be designed for each segment. This approach ensures that clustering remains focused on Open Banking engagement, while still allowing a rich understanding of the consumer characteristics within each cluster. This profiling provided a comprehensive overview of the characteristics of each behavioural segment, enabling a deeper understanding of the different types of Open Banking users.

Table 5.5.1: Groups of consumers based on their Banking Behaviour Segmentation

Demographic / Behavioural Variable	Category	Emerging Users	Potential Adopters	Engaged Users	Total
Gender	Male	9	21	21	51
	Female	16	27	24	67
Age	18–24	5	2	3	10
	25–34	8	26	24	58
	35–44	7	12	6	25
	45–54	1	6	7	14
	More than 55	4	2	5	11
Marital Status	Married	18	38	33	89
	Widowed	0	1	0	1
	Divorced	0	1	1	2
	Never married	7	8	11	26
Level of Education	Less than high school	1	2	1	4
	High school graduate	6	8	4	18
	Bachelor’s degree	14	26	23	63
	Master’s degree	0	9	12	21
	Professional certificate	2	0	1	3
	Doctorate	2	3	3	8
	Post-doctorate	0	0	1	1
Monthly Income	Less than RM2,000	11	11	14	36
	RM2,000 – RM3,999	4	11	10	25
	RM4,000 – RM5,999	9	11	6	26
	RM6,000 – RM7,999	0	6	3	9
	More than RM8,000	1	9	12	22
	Behavioural Variables (Mean)	Familiarity with Open Banking	2.30	3.18	3.80
Usage of Open Banking		2.68	3.52	4.30	–
Usage of Internet Banking		4.69	2.23	4.73	–
Total Respondents		25	48	45	118

Table 5.5.1 shows the final cluster centre’s resulting from the Cluster Analysis conducted on the research of segmentation of consumer regarding open banking. The cluster

analysis resulted in the identification of three clusters. The clusters are defined by the characteristics of the variables that are most similar within each cluster and most dissimilar between clusters relating to their familiarity, usage experience and internet banking usage in Islamic banking industry in Malaysia.

Cluster 1 consists of 25 respondents and represents the group with the lowest engagement with Open Banking. The gender distribution within this cluster shows a higher proportion of females (16) compared to males (9). In terms of age, the respondents are relatively distributed across several age groups, although the largest numbers are observed among individuals aged 25–34 (8 respondents) and 35–44 (7 respondents). This indicates that individuals in this cluster are not necessarily the youngest respondents, but rather those who may have limited exposure to Open Banking despite being in active working age groups. Most respondents in this cluster are married (18), with a smaller number being single (7). The education profile indicates that the majority hold a bachelor's degree (14), followed by high school graduates (6), suggesting a moderate to relatively high level of educational attainment. However, in terms of income, the largest proportion of respondents in this cluster earn less than RM2,000 (11 respondents), indicating that this segment includes individuals in lower income categories.

The behavioural variables further confirm the characteristics of this cluster. Respondents in Cluster 1 report the lowest mean scores for familiarity with Open Banking (2.30) and usage of Open Banking (2.68), suggesting limited awareness and engagement with Open Banking services. Nevertheless, this cluster records a high mean score for internet banking usage (4.69), indicating that these respondents are already comfortable with digital banking platforms but have not yet transitioned to or explored Open Banking services. This

suggests that the barrier for this group may not be digital capability but rather limited knowledge, trust, or exposure to Open Banking.

Cluster 2 is the largest segment, comprising 48 respondents, and represents individuals who show moderate engagement with Open Banking. Similar to Cluster 1, females slightly outnumber males (27 females compared to 21 males). The dominant age group in this cluster is 25–34 years (26 respondents), followed by respondents aged 35–44 (12 respondents). This suggests that this cluster largely consists of young working adults who are typically more exposed to financial technology innovations. The majority of respondents in this cluster are married (38), with a smaller proportion being single (8).

In terms of educational background, most respondents hold a bachelor's degree (26), followed by master's degrees (9), indicating relatively high educational attainment within this cluster. The income distribution is relatively balanced, with respondents spread across lower and middle-income categories, particularly RM2,000–RM3,999 and RM4,000–RM5,999. Behaviourally, this cluster shows moderate familiarity with Open Banking (mean = 3.18) and moderate usage (mean = 3.52), suggesting that respondents in this segment are becoming increasingly aware of Open Banking and may have begun exploring such services. However, an interesting observation is that this cluster records the lowest mean score for internet banking usage (2.23) among the three clusters. This may indicate that respondents in this segment are either less reliant on traditional internet banking platforms or may prefer newer financial technology applications such as mobile banking or FinTech services. Overall, Cluster 2 represents a transitional group that has the potential to adopt Open Banking more actively in the future.

Cluster 3 consists of 45 respondents and represents individuals with the highest engagement with Open Banking. The gender distribution remains fairly balanced, with 24 females and 21 males. This data reflects the Central Bank of Malaysia's effort to empower women's economic participation through targeted financial inclusion initiatives (Central Bank of Malaysia, 2024). In collaboration with the Financial Education Network (FEN) which is an inter-agency platform dedicated to enhancing financial literacy in Malaysia, the Bank prioritizes women's financial empowerment by delivering targeted awareness and outreach programs. However, the relatively balanced distribution between male and female respondents across clusters indicates that engagement with Open Banking is not strongly concentrated within a single gender group.

Similar to Cluster 2, the largest proportion of respondents falls within the 25–34 age group (24 respondents), indicating that young professionals are strongly represented among the most engaged users of Open Banking. This cluster profile reveals younger individuals to be the most active users of Open banking. This is consistent with research suggesting that younger individuals are generally more open to adopting new technologies, including Open Banking (Morgan & Trinh, 2020). According to Lee and Zarnic (2020), the way young people interact with technologies differs significantly from previous generations. The impact of digital technologies on young people's interactions, friendships, learning, social integration, and interactions with financial services is significant. There is some evidence to suggest that the digital payment usage is strongest among those aged 18 to 40 based on The Edge Malaysia 2022 research on e-wallet adoption in Malaysia (Gomes, 2022). Younger individuals, born digital natives, tend to be more tech-savvy and willing to experiment with digital financial services. Moreover, it is believed that these younger generations get more immersed in smart

technology, which lead to their desire to try new applications and feel particularly concerned about the ease of use, safety, and also privacy aspect of technology (Wood 2013; Mason et al., 2022).

However, multiple studies found significant disparities in adoption rates and intentions based on gender (Mahmud et al., 2023; Imam et al., 2022; Morgan & Trinh, 2020; Mwiya et al., 2017). According to Mahmud et al. (2023), FinTech adoption rates were greater among young people and males, and this tendency also applied to FinTech adoption intentions across numerous markets. Based on a study conducted in the South Asian Association for Regional Cooperation (SAARC) and the Association of Southeast Asian Nations (ASEAN) region, the males outnumber females, and younger consumers are more likely to use fintech services than their older counterparts (Imam et al., 2022). Chong et al. (2019) also supported that Malaysian males have a greater intention to adopt FinTech services compared to females.

Most respondents in this cluster are married (33), although a notable number have never married (11). The education profile indicates relatively high educational attainment, with the majority holding bachelor's degrees (23) and a substantial number holding master's degrees (12). This cluster also includes respondents with doctoral qualifications, suggesting a relatively highly educated segment. This pattern may reflect the relationship between higher education, financial literacy, and the willingness to adopt new financial technologies. Research suggested that a formal education plays an important role in providing a good financial knowledge for individuals (Fitriaty et al., 2023; Zhou et al., 2022). This financial knowledge is important for them to recognize and aware of the potential use and benefit of

Open Banking services in their lives. Besides that, math skills and sociability are key elements in the relationship between schooling and financial literacy (Zhou et al., 2022).

Besides that, Mwiya et al. (2017) reported that higher levels of education are positively correlated with the adoption FinTech. Furthermore, Morgan and Trinh (2020) stated that people who have attained higher education are much more likely to be aware of FinTech products. Therefore, it increases the possibility of using it as it is believed that educated individuals are more likely to recognise and value the benefits of Open Banking services.

The income distribution within this cluster is more diverse, but it includes the largest number of respondents earning more than RM8,000 (12) compared to the other clusters. This suggests that individuals with higher income levels may have greater access to financial products and may be more willing to adopt innovative financial services. There is some evidence to suggest that those with higher incomes tend to use FinTech services more than those with lower income. Buchak et. al, (2018), found that FinTech users tend to be more creditworthy and have higher incomes. According to recent research, FinTech expands income gaps indicating that people who use its services have more financial advantages than others who do not (Girma & Huseynov, 2024).

The behavioural indicators strongly differentiate this cluster from the others. Cluster 3 records the highest mean scores for familiarity with Open Banking (3.80) and usage of Open Banking (4.30), indicating strong awareness and active engagement with Open Banking services. Additionally, respondents in this cluster also demonstrate high usage of internet banking (4.73), suggesting that they are highly comfortable with digital financial platforms in general. This cluster therefore represents consumers who are highly receptive to financial innovation and may serve as early adopters or advocates of Open Banking services.

Overall, the cluster analysis highlights three distinct consumer segments that represent different levels of engagement with Open Banking. Cluster 1 consists of individuals who are familiar with digital banking but have limited awareness of Open Banking. Cluster 2 represents individuals who are gradually becoming familiar with Open Banking and may adopt such services in the future. Finally, Cluster 3 represents highly engaged users who demonstrate strong familiarity and usage of Open Banking services. These distinctions provide valuable insights into the varying levels of consumer readiness for Open Banking adoption and suggest that targeted awareness and educational strategies may be required to encourage broader adoption across different consumer segments.

5.6 Factor Analysis

Confirmatory Factor Analysis (CFA) was computed using AMOS to test the measurement models. As part of confirmatory factor analysis, factor loadings were assessed for each item as shown in Table 5.6.1.

5.6.1 Reliability Analysis

The reliability and internal consistency of the constructs were examined through Cronbach's Alpha and Composite Reliability values. Cronbach's Alpha for each construct in the study was found to be above the required threshold of 0.70 (Nunnally & Bernstein, 1994; Hair et al., 2010). According to Hair et al. (2010), a benchmark of 0.70 is acceptable for composite reliability values, while values in the range of 0.60 to 0.70 are acceptable in exploratory research (Hair et al., 2014). In this study, composite reliabilities ranged from 0.6842 to 0.9014, which are within the acceptable range. Furthermore, construct reliability was established for each construct in the study, as presented in Table 5.6.1 and illustrated by the AMOS-generated CFA in Figure 5.6.1.

Table 5.6.1: Model Estimates and Reliability

Constructs	Items	Estimate	C.R.	P	CA (α)
Attitude (A)	A3	.885	*		0.932
	A2	.916	15.090	***	
	A1	.924	15.398	***	
Subjective Norm (SN)	SN3	.851	*		0.902
	SN2	.940	14.284	***	
	SN1	.831	11.463	***	
Perceived Behaviour Control (PBC)	PBC3	.839	*		0.860
	PBC2	.902	12.084	***	
	PBC1	.756	9.381	***	
Performance Expectancy (PE)	PE4	.803	*		0.906
	PE3	.816	10.422	***	
	PE2	.830	10.686	***	
	PE1	.857	11.203	***	
Effort Expectancy (EE)	EE4	.891	*		0.952
	EE3	.930	16.126	***	
	EE2	.921	15.746	***	
	EE1	.907	15.147	***	
Risk (R)	PVR3	.910	*		0.940
	PVR2	.923	16.894	***	
	PVR1	.937	17.658	***	
	FR3	.841	13.325	***	
	FR2	.705	9.553	***	
	FR1	.815	12.456	***	
	PR3	.575	7.069	***	
	PR2	.737	10.310	***	
	PR1	.541	6.524	***	
Financial Confidence (FC)	FC3	.811	*		0.854
	FC2	.786	8.876	***	
	FC1	.837	9.439	***	
Trust (T)	T3	.561	*		0.737
	T2	.816	5.335	***	
	T1	.727	5.248	***	

CR, critical ratio; CA, Cronbach's alpha; *Unstandardized regression weights anticipated as 1; ***Significant level at $p < 0.05$.

Reliability test has been performed to examine the reliability of the measurement used in the study. The value of Cronbach Alpha of 0.7 and above is considered as reliable while Cronbach Alpha value 0.6 is poor but still it is acceptable (Sekaran, 2003). The summarized of Cronbach Alpha values for variables understudied are shown in the Table 5.6.1.

The results in Table 5.6.1 indicate that all constructs in the model exhibit strong measurement properties. Most items show high factor loadings above 0.70, suggesting that each item reliably measures its intended construct. The critical ratios (C.R.) for all significant items are well above the standard threshold, and all are significant at $p < 0.05$, confirming the statistical validity of the estimates.

The internal consistency reliability, as indicated by Cronbach's alpha, ranges from 0.751 for Trust to 0.916 for Attitude, demonstrating that all constructs meet or exceed the acceptable reliability threshold of 0.70. This confirms that the items within each construct are cohesive and consistently measure the underlying concept.

The Risk construct, which incorporates perceived risk, financial risk, and privacy risk, shows particularly strong reliability ($\alpha = 0.915$), indicating that combining multiple aspects of risk provides a robust representation of consumers' overall risk perception in the context of Open Banking. Similarly, Financial Confidence, Effort Expectancy, and Performance Expectancy also show high reliability, supporting their use in the structural model.

In summary, these results confirm that the measurement model is both reliable and valid, providing a solid foundation for subsequent analysis and hypothesis testing as shown in

Figure 5.6.1. The findings suggest that the items selected for each construct are appropriate for capturing Malaysian consumers' perceptions and attitudes toward Open Banking services.

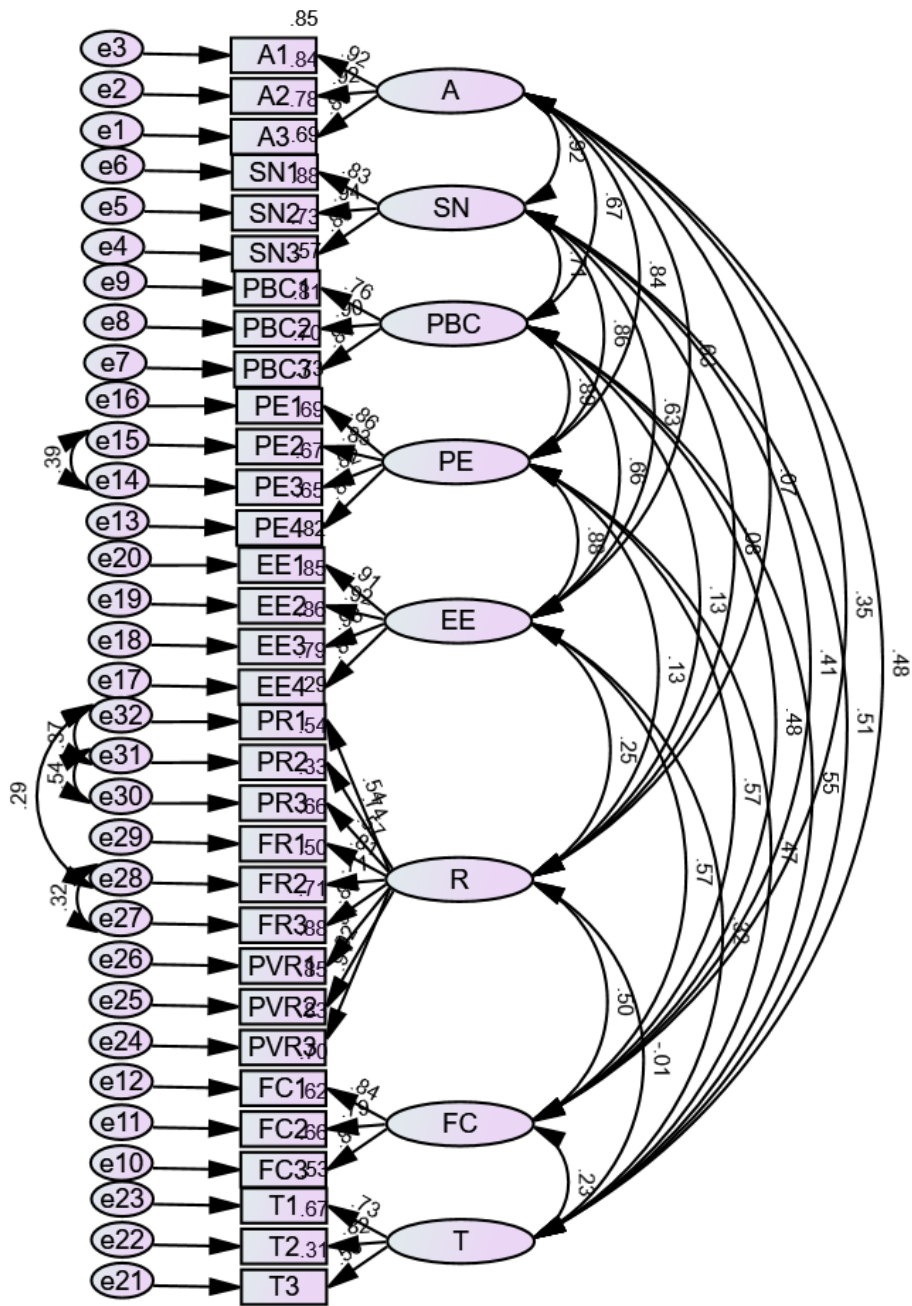


Figure 5.6.1: Generated Confirmatory Factor Analysis (AMOS Graphic)

5.6.2 Discriminant Validity

Discriminant validity was evaluated following the method proposed by Fornell and Larcker (1981), which involves comparing the square roots of the Average Variance Extracted (AVE) with the inter-construct correlation coefficients. According to their criteria, an AVE greater than 0.5 is required to confirm convergent validity, accompanied by factor loadings above 0.5. The results presented in Table 6.5.2 confirmed that all constructs exhibited factor loadings above the recommended threshold, with AVE values ranging from 0.503 to 0.832, thereby supporting convergent validity.

The square roots of the AVEs, which ranged from 0.709 to 0.912, were consistently higher than the corresponding inter-construct correlations. This suggests that each construct is more strongly associated with its own indicators than with other constructs, confirming discriminant validity. For example, the square root of the AVE for Effort Expectancy (EE) is 0.912, which is significantly higher than its highest inter-construct correlation of 0.882 with Performance Expectancy (PE). This indicates that EE is conceptually distinct from PE, even though they share a moderate positive relationship. Similarly, Risk (R), with a square root of AVE of 0.788, exhibits weak correlations with other constructs, further emphasizing its unique role within the measurement model.

The AVE values also provide insights into the overall explanatory power of the latent constructs. Constructs such as Effort Expectancy (EE) and Attitude (A), with AVE values of 0.832 and 0.825 respectively, demonstrate high levels of shared variance with their indicators, indicating robust measurement reliability. In contrast, Trust (T) has a lower AVE of 0.503,

suggesting that while it meets the minimum threshold for convergent validity, it may require refinement or the inclusion of additional indicators to enhance its explanatory power.

The Composite Reliability (CR) values, ranging from 0.748 to 0.952, confirm the internal consistency of the constructs. Notably, Effort Expectancy (EE) and Attitude (A) exhibit exceptionally high CR values (0.952 and 0.934, respectively), reflecting their high reliability and consistency in measurement. On the other hand, Trust (T), with a CR of 0.748, falls closer to the lower bound of acceptability, further supporting the need for careful interpretation and potential improvement of its measurement indicators.

Table 5.6.2: AVEs, CR and Correlation Coefficients of Constructs

Construct	A	SN	PBC	PE	EE	R	FC	T	AVE	CR
Attitude (A)	<i>0.908</i>								0.825	0.934
Subjective Norms (SN)	0.922	<i>0.875</i>							0.766	0.907
Perceived Behaviour Control (PBC)	0.675	0.710	<i>0.834</i>						0.696	0.873
Performance Expectancy (PE)	0.841	0.863	0.891	<i>0.827</i>					0.684	0.896
Effort Expectancy (EE)	0.627	0.629	0.659	0.882	<i>0.912</i>				0.832	0.952
Risk (R)	0.074	0.076	0.133	0.129	0.251	<i>0.788</i>			0.621	0.935
Financial Confidence (FC)	0.349	0.410	0.480	0.568	0.567	0.496	<i>0.812</i>		0.659	0.853
Trust (T)	0.485	0.511	0.552	0.470	0.319	-0.009	0.229	<i>0.709</i>	0.503	0.748

AVE, average variance extracted; CR, composite reliability; Off-diagonal elements are correlations, and the square root of the AVE value is indicated in italic.

The results collectively confirm that the measurement model satisfies the criteria for reliability and validity. Each construct demonstrates adequate convergent and discriminant validity, ensuring the robustness of the model for further structural equation modelling (SEM)

analysis. Importantly, the clear distinction among constructs underlines the theoretical soundness of the model and its ability to measure the underlying conceptual framework effectively. Based on the reliability and validity result, the construct has achieved all the required values. Therefore, the measurement model shows in Figure 5.6.2 was valid to be utilized for the structural equation modelling analysis.

Model-fit measures were used to assess the model's overall goodness of fit, including the chi-square to degrees of freedom ratio (CMIN/df), comparative fit index (CFI), Tucker–Lewis index (TLI), parsimonious normed fit index (PNFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA), with all values falling within their respective common acceptance levels (Ullman, 2001; Hu and Bentler, 1998; Bentler, 1990). This indicates that the model is a good fit for the data. The eight-factor model (Attitude, Subjective Norms, Perceived Behaviour Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust) yielded a good fit, as shown in Table 5.6.3.

According to Crowley and Fan (1997), it is generally accepted that it is crucial to report variety of fit indices, as they each illuminate different facets of model fit even though there are no definitive standards exist for assessing model fit. The Model Chi-Square statistic is considered a critical element of reporting, and it should always be presented (Kline, 2005; Hayduk et al., 2007). Hu and Bentler (1999) recommended a two-index reporting strategy that consistently pairs the Standardized Root Mean Square Residual (SRMR) the Root Mean Square Error of Approximation (RMSEA) with a combinational rule which is RMSEA of 0.06 or lower and a SRMR of 0.09 or lower. Kline (2005) emphasizes the importance of certain indices, specifically advocating for the inclusion of the Chi-Square test, the RMSEA, the CFI, and the

SRMR in reports. Boomsma (2000) echoes similar sentiments but further suggests the reporting of squared multiple correlations for each equation.

Considering this guidance, the Chi-Square statistic along with its degrees of freedom and p-value, the RMSEA along with its confidence interval, the SRMR, the CFI, and a parsimony fit index like the Parsimonious Normed Fit Index (PNFI) are reported in this study. These particular indices are preferred because they have demonstrated relative insensitivity to variations in sample size, model misspecification, and parameter estimates, making them more reliable indicators of model fit (Hooper, Coughlan, Mullen, 2008).

Table 5.6.3: Validity of CFA Model Fit

Index Name	χ^2 / df	CFI	IFI	PGFI	PNFI	SRMR	RMSEA
Index Criterion	<5	>.90	>.90	>.50	>.50	<.08	<.10
Actual Value	1.710 (p-value = .000)	.914	.915	.605	.710	.0727	.078

As indicated by the data in Table 5.6.3, the model displayed a chi-square to degrees of freedom ratio (χ^2/df) of 1.710 and an array of fit indices with values suggestive of a good model fit: the Comparative fit Index (CFI) at 0.914, Incremental Fit Index (IFI) at 0.915, the Parsimony Goodness-of-Fit Index (PGFI) at .605 and the Parsimonious Normed Fit Index (PNFI) at .710, the Standardized Root Mean Square Residual (SRMR) at .0727, and the Root Mean Square Error of Approximation (RMSEA) at 0.078.

5.7 Descriptive Analysis of the Variables

Descriptive analysis was conducted to examine the constructs Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust, as well as the dependent variable, Intention to Use Open Banking. This analysis provides an overview of respondents' perceptions and the general status of each construct in terms of mean and standard deviation, as presented in Table 5.7.1.

The mean values were derived from responses on a five-point Likert scale, where scores closer to 5 indicate stronger agreement or positive evaluation, and scores closer to 1 indicate disagreement or negative evaluation. As expected, variation in responses was observed, reflecting differences in perceptions and experiences with Open Banking.

Table 5.7.1: Descriptive Analysis for Each Variable

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Intention to Use Open Banking	118	1.00	5.00	3.5847	.98992
Attitude	118	1.00	5.00	3.6836	1.17980
Subjective Norms	118	1.00	5.00	3.5593	1.12545
Perceived Behaviour Control	118	1.00	5.00	3.5734	1.09205
Performance Expectancy	118	1.00	5.00	3.7394	1.02030
Effort Expectancy	118	1.00	5.00	3.9767	1.04850
Risk	118	1.00	5.00	3.6657	.96247
Financial Confidence	118	1.00	5.00	4.0537	.88242
Trust	118	1.00	5.00	3.0678	.97213

Table 5.7.1 shows the minimum, maximum, mean, and standard deviation for all variables. The mean scores for the independent variables which are Attitude (M = 3.68), Subjective Norms (M = 3.56), Perceived Behavioural Control (M = 3.57), Performance Expectancy (M = 3.74), Effort Expectancy (M = 3.98), Risk (M = 3.67), Financial Confidence (M = 4.05), and Trust (M = 3.07) indicate generally moderate to high agreement among respondents. The standard deviations for the independent variables range from 0.88 to 1.18, while the dependent variable, Intention to Use Open Banking, has a standard deviation of 0.99, suggesting moderate variability in responses. Overall, the descriptive analysis highlights the relative positioning of each construct, showing that respondents tend to report higher perceptions of Effort Expectancy, Financial Confidence, and Performance Expectancy, while Trust exhibits slightly lower agreement. These insights provide a foundation for further inferential analysis.

5.8 Correlation Analysis

To examine the relationships among constructs, Pearson correlation was employed. Although Likert-scale items are technically ordinal, it is common in social science research to treat such scales as approximately interval-level data, particularly when they contain five or more points and the distribution is reasonably symmetric (Dawes, 2008; Norman, 2010). This approach allows for the calculation of means, standard deviations, and Pearson correlations, providing a direct measure of the strength and direction of linear relationships between variables.

Pearson correlation is particularly suitable in this study because it aligns with subsequent regression analyses, which assume interval-level data and linear relationships among constructs. It also facilitates easier interpretation and comparison across variables, whereas Spearman's rank correlation is non-parametric and only captures monotonic relationships. The correlation analysis examines the relationship between the independent factors including Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust and the dependent variable, Intention to Use Open Banking.

As shown in Table 5.8.1, most factors demonstrate statistically significant relationships with Intention to Use Open Banking. Specifically, Attitude ($r = 0.531$, $p < 0.001$), Subjective Norms ($r = 0.507$, $p < 0.001$), Perceived Behavioural Control ($r = 0.446$, $p < 0.001$), Performance Expectancy ($r = 0.533$, $p < 0.001$), Effort Expectancy ($r = 0.390$, $p < 0.001$), Risk ($r = -0.236$, $p = 0.01$), and Trust ($r = 0.432$, $p < 0.001$) are significantly associated with the intention to adopt Open Banking. The negative correlation for Risk indicates that higher perceived risk is associated with lower intention to adopt these services. However, Financial Confidence ($r = 0.026$, $p = 0.782$) is not significantly correlated with Intention to Use Open

Banking, suggesting that respondents' self-reported financial confidence does not directly influence their adoption intention in this sample.

Table 5.8.1: Correlation between Determining Factors and the Intention to Use Open Banking

Variables	Correlation	Significant Level
Intention to Use Open Banking	1.000	.000
Attitude	.531**	<.001
Subjective Norms	.507**	<.001
Perceived Behaviour Control	.446**	<.001
Performance Expectancy	.533**	<.001
Effort Expectancy	.390**	<.001
Risk	-.236*	0.01
Financial Confidence	0.026	0.782
Trust	.432**	<.001

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Nevertheless, it is important to acknowledge the limitations of this approach. Treating ordinal Likert data as interval-level assumes equal spacing between response categories, which may not perfectly reflect respondents' perceptions. Extreme or skewed distributions could affect the correlation results. As a robustness check, future studies could consider Spearman correlations or other non-parametric analyses to verify the consistency of the findings under stricter ordinal assumptions. Overall, the correlation analysis provides evidence that most constructs derived from the Theory of Planned Behaviour and UTAUT-related factors are significantly associated with the intention to use Open Banking, laying the foundation for further regression.

5.9 Regression Analysis

A regression analysis has been conducted to study a statistically significant linear relationship between the variables; Attitude, Subjective Norms, Perceived Behaviour Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, Trust and the

Intention to Use Open Banking ($p < .05$) utilizing the stepwise approach, see results in Table 5.9.1.

The model has an R-squared value of 0.462, which means that approximately 46.2% of the variability in the Intention to Use Open Banking can be accounted for by the Factors selected in the model. It shows that analysis of variance from the ANOVA Table indicated that F statistic produced ($F=24.224$) is found to be significant ($p=0.000$) at the level 0.05 level.

Table 5.9.1: Result of Stepwise Linear Regression

Variables	B	T	Significant Level	Tolerance	VIF
Attitude	.265	2.412	.017	.394	2.540
Performance Expectancy	.278	2.538	.012	.397	2.521
Risk	-.310	-4.444	<.001	.981	1.019
Trust	.231	3.044	.003	.831	1.204
Constant	2.203				
R-squared	.462				
Adjusted R-squared	.443				
F Value	24.224				
Sig.	0.000				

The coefficients in Table 5.9.1 shows the specific effects of each independent variable on Intention to Use Open Banking. The Factor Attitude has a positive and statistically significant effect on intention to use Open Banking ($\beta = 0.265$, $t = 2.412$, $p = 0.017$) indicating that attitudes are positively affecting an individual's intention to use Open Banking services. This result is consistent with the principles of Perceived Behavioural Theory, which emphasises the importance of individuals perceived capability in performing a behaviour.

Performance Expectancy Factor also has a positive and statistically significant effect on Intention to Use Open Banking ($\beta = 0.278$, $t = 2.538$, $p = 0.012$) indicating that individuals who perceive that using Open Banking will improve their performance are slightly more likely to plan to use it. These findings provide empirical support for key constructs proposed in the

Unified Theory of Acceptance and Use of Technology, particularly the role of performance expectancy in shaping behavioural intention toward financial technology adoption.

On the hand, the Factor Risk has a negative and highly significant effect on Intention to Use Open Banking ($\beta = -0.310$, $t = -4.444$, $p < 0.001$), suggesting that individuals who perceive higher risks associated with Open Banking are less likely to plan to use it. While the Trust variable has a positive and significant effect on Intention to use Open Banking ($\beta = 0.231$, $t = 3.044$, $p = 0.003$), indicating that individuals who have more trust in Open Banking are more likely to plan to use it.

Concerns may arise regarding the correlation between Risk and Trust, as they are frequently interconnected in scholarly literature (Bylykbashi, Fitamant, & Lee, 2021). However, upon examining the VIF values, the notion of multicollinearity becomes questionable. This may have to be further explored.

5.10 Conclusion

This chapter presented the findings from Study 2, the first quantitative study of this research, which aimed to investigate consumer acceptance of Open Banking in the context of Islamic banking in Malaysia. The chapter began by outlining the methodology, including data collection, sample characteristics, and analytical techniques. A profile of the respondents highlighted the demographic and banking behaviour distribution, providing context for subsequent analyses.

Descriptive analyses revealed respondents' levels of familiarity, usage, and intention to adopt Open Banking, offering initial insights into consumer awareness and engagement. Cluster analysis segmented respondents based on demographic and banking behaviour

patterns, allowing for a deeper understanding on different consumer groups. Factor analysis validated the measurement scales, ensuring reliability and construct validity, while correlation analyses highlighted the relationships among variables included. Pearson correlation was used to assess linear relationships between constructs, following common practice in social science research, despite the ordinal nature of Likert-scale data.

Regression analysis indicated that the model significantly explains the intention to use Open Banking. Attitude and Performance Expectancy positively influenced intention, suggesting that favourable attitudes and perceived performance benefits increase the likelihood of adoption. Trust also had a positive effect, while perceived Risk negatively affected intention, indicating that higher perceived risks reduce adoption. Although Risk and Trust are often correlated in the literature, multicollinearity checks suggested that this did not compromise the model, although more research would be appropriate.

While the study provides valuable insights, several limitations should be noted. The sample was not fully representative of the Malaysian population, with higher proportions of females, younger adults, married individuals, and those with higher educational attainment, as well as an overrepresentation of middle-income earners. Self-reported survey data may be subject to social desirability bias, and treating Likert-scale responses as interval-level data for Pearson correlation and regression assumes equal spacing that may not fully reflect respondents' perceptions. Additionally, the study focused on intention to adopt Open Banking rather than actual usage behaviour, which may be influenced by external factors such as regulations, technological infrastructure, and financial service offerings.

Despite these limitations, the chapter offers a robust analysis of key determinants influencing the intention to adopt Open Banking, highlighting demographic and behavioural

segmentation, attitudes, and perceptions. These findings establish a solid foundation for the Structural Equation Modelling presented in the next chapter, contributing both to theoretical understanding and practical implications for Islamic banking institutions seeking to enhance Open Banking adoption.

CHAPTER SIX

Study 3: Quantitative Study 2

6.1 Introduction

This chapter focused on the analysis and findings from the second quantitative data set of the research. Following the findings from first quantitative data set in previous chapter, this chapter aimed to gain a deeper insight on the factors influencing the Open Banking usage intention and the relationship between variables understudied with more diverse respondent. It aimed to meticulously examine the interrelations between the variables in explaining the Open Banking usage intention among Malaysian Islamic banking consumers.

6.2 Methodology

The sample which is 341 respondents exceeded the minimum sample size determined by the requirements for the statistical techniques employed (Hair et al., 2014), specifically for the Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) analysis using AMOS. The CFA were used to analyze the measurement model and SEM were used to study the structural model. The questionnaire encompassed a total of 34-item scales to measure the constructs of interest, all of which were derived from established instruments in the literature to ensure construct validity, see Appendix C for Questionnaire.

6.3 Profile of the Respondents

Table 6.3.1 illustrates the demographic profile of the respondents who participated in the study, segmented into various socio-demographic categories. The table gives an insight on the background of the respondents for this study.

Table 6.3.1: Profile of the respondents

Variable	Categories	N (Sample)	% (Sample)	National Comparison & Sample Representation
Gender	Male	158	46.3	Slightly underrepresented compared with national population (~52.4% male, DOSM 2025).
	Female	183	53.7	Slightly overrepresented compared with national population (~47.6% female, DOSM 2025).
Age	18–24	66	19.4	Overrepresented relative to national young adult share; national working-age 15–64 ~70.4%, 65+ ~8% (DOSM 2025).
	25–34	109	32.0	Slightly overrepresented; national working-age 15–64 ~70.4% (DOSM 2025).
	35–44	96	28.2	Slightly overrepresented compared with national working-age distribution (DOSM 2025).
	45–54	55	16.1	Slight underrepresentation relative to national mid-aged adults (DOSM 2025).
	55–64	15	4.4	Underrepresented; older adults in the population higher (~8%, DOSM 2025).
Marital Status	Married	196	57.5	Slightly overrepresented compared with national proportion (~55.5% married, DOSM 2020).
	Widowed	5	1.5	Underrepresented (national ~3.8%, DOSM 2020).
	Divorced	14	4.1	Slightly overrepresented; national ~1.6–1.7% (DOSM 2020).
	Never Married	126	37.0	Underrepresented compared with national ~34% (DOSM 2020).
Education	Less than high school	17	5.0	Underrepresented; lower education levels larger nationally (DOSM).
	High school graduate	108	31.7	Underrepresented compared with national secondary education share (DOSM).
	Bachelor’s degree	152	44.6	Overrepresented; national degree holders ~22.3% (DOSM).
	Master’s degree	36	10.6	Slightly overrepresented; postgraduate attainment nationally smaller (DOSM).
	Professional certificate	24	7.0	Overrepresented; no direct benchmark, likely smaller in general population (DOSM).
	Doctorate	3	0.9	Overrepresented; very small proportion nationally (DOSM).
	Post-doctorate	1	0.3	Overrepresented; negligible share in national population (DOSM).

Variable	Categories	N (Sample)	% (Sample)	National Comparison & Sample Representation
Income (RM)	<RM2,000	58	17.0	Underrepresented relative to lower-income households; national median household income RM7,017 (DOSM 2024).
	RM2,000–RM3,999	113	33.1	Middle-lower income represented well; aligns with national distribution (DOSM 2024).
	RM4,000–RM5,999	75	22.0	Mid-income aligned with national median (DOSM 2024).
	RM6,000–RM7,999	44	12.9	Slightly underrepresented near median income (DOSM 2024).
	>RM8,000	51	15.0	Higher-income respondents underrepresented relative to national upper quintiles (DOSM 2024).

Based on the table 6.3.1, the gender distribution of the sample skews slightly towards females, who make up 53.7% of the respondents, with males representing the remaining 46.3%. Compared with national data from the Department of Statistics Malaysia (DOSM), males are slightly underrepresented while females are overrepresented in this sample (~52.4% male, 47.6% female, DOSM 2025). This skew provides insight into potential user demographics for Open Banking services and reflects the increasing participation of Malaysian women in financial inclusivity. According to the Central Bank of Malaysia (2023), there is no significant gender gap in the context of account ownership with 98% of Malaysian women owning a deposit account compared to 97% of men, in term of financial inclusion. Therefore, this skew may provide a relevant demographic in giving insight on the segmentation of potential Open Banking services user.

The age of participants ranges broadly, with the majority falling within the 25-34 age bracket (32%), followed by those aged 35-44 (28.2%). Nationally, younger adults (15–34) make up a smaller proportion of the working-age population (~16–17% per DOSM 2025), indicating that this sample overrepresents younger and middle-aged adults while

underrepresenting older respondents. This suggests a predominance of young to middle-aged adults in the study. These age profile, with a predominant 25-34 and 35-44 age range, aligns well with key segments in digital banking adoption. Young to middle-aged individuals are more proficient in technology, willing to explore technological innovations, and financially active, making them a perfect demographic for Open Banking services (Morgan & Trinh, 2020; Lee & Zarnic, 2020; Gomes, 2022; Mason et al., 2022). This age group represents a generation that values efficiency and flexibility in banking, which Open Banking platforms provide.

Besides that, marital status demographic shows a significant proportion of married respondents (57.5%), with those never married representing a substantial proportion at 37%. Nationally, ~55.5% of adults are married (DOSM 2020), indicating slight overrepresentation in the married category, while never married individuals are slightly overrepresented in the sample as well (national ~34%). In terms of marital status, the high proportion of married respondents may represent a financially established group with complex banking demands such as mortgage services, savings management, or family financial planning. Open Banking can support these needs by providing comprehensive financial insights and facilitating access to wide range of banking services. less family-constrained individuals often demonstrate higher technology readiness and stronger willingness to experiment with innovative financial technologies.

On the other hand, the largest group consists of respondents holding a bachelor's degree (44.6%), indicating a relatively high level of education among participants in terms of educational attainment. High school graduates account for 31.7%, while postgraduate degrees (master's and higher) are held by 18.8% of the sample. Compared with national education levels (bachelor's ~22.3%, postgraduate much lower, DOSM), this sample

overrepresents higher-educated individuals while underrepresenting those with lower educational attainment. The educational attainment in the sample is noteworthy, with a high proportion holding at least a bachelor's degree and a significant percentage with postgraduate qualifications. This relatively high level of education is associated with increased digital literacy, which can enhance trust and understanding of Open Banking (Zhou et al., 2025). Educated consumers are also more likely to appreciate the data integration and financial insights offered by Open Banking platforms as higher levels of education are associated with greater financial literacy, digital literacy, and the ability to interpret financial information, which in turn facilitate the adoption and effective use of innovative financial technologies (Lusardi & Mitchell, 2014; Morgan & Trinh, 2019). This data reflects Malaysia's ongoing drive toward a knowledge-based economy and increasing digital skills (Malaysia Digital Economy, 2024).

Finally, the income distribution in this sample set is varied, with the largest group earning between RM2,000 and RM3,999 (33.1%) and the second largest between RM4,000 and RM5,999 (22.0%). This income range includes middle-income earners which make up a significant portion of the Malaysian population. The income group in Malaysia were described as B40, represents the bottom 40% of income earners; M40 the middle 40%, and T20 the top 20% of the population. According to the Department of Statistics Malaysia (DOSM), the average income across the household group is: B40 – RM3,401; M40 – RM7,971; T20 – RM19,752. Lower-income earners (<RM2,000, 17%) and higher-income earners (>RM8,000, 15%) are slightly underrepresented compared with the population. The income level in this sample reflects the bottom 40% and middle 40% of the income earner population in Malaysia, thus making it a relevant sample for inquiring insight on Open Banking usage intention among

them. This demographic may desire Open Banking to gain access to cost-effective and easily available financial services, particularly for budgeting, expense tracking, and savings management. This is because digital financial platforms can reduce transaction costs, improve access to financial products, and provide convenient financial management tools which are especially beneficial for middle- and lower-income consumers seeking efficient and affordable financial services. Furthermore, the demand for flexible and accessible banking is consistent with government aspirations to enhance financial capability and access across income levels as mentioned in the Financial Sector Blueprint 2022-2026 (Central Bank of Malaysia, 2022).

To summarize, the demographic profile of this sample, which includes the majority of young to middle-aged individuals, balanced gender representation, high educational attainment, and diverse income levels, shows a consumer segment potentially willing to adopt Open Banking services in Malaysia. While some groups are over- or underrepresented relative to national benchmarks, these attributes are consistent with developments in Malaysia's digital banking sector, where young professionals and educated consumers are becoming more open to new, technology-driven financial services. This sample could therefore provide valuable information into which segments are most responsive to Open Banking in Malaysia, allowing for targeted marketing and personalized products and services that fit with demographic preferences and digital banking patterns.

6.4 Cluster Analysis on Demographic and Banking Behaviour Segmentation

The clustering procedure began with hierarchical clustering using Ward's method with Squared Euclidean distance as the similarity measure. Ward's method was selected over other linkage methods because it produces clusters that are more balanced in size and more

interpretable. Unlike single linkage, which can produce “chained” clusters, or complete linkage, which can create overly compact clusters, Ward’s method minimizes the within-cluster variance, resulting in highly homogeneous groups (Everitt, Landau, Leese, & Stahl, 2011; Aldenderfer & Blashfield, 1984; Ward, 1963).

Hierarchical clustering was employed to determine the optimal number of clusters, as it provides a visual and statistical assessment of natural groupings in the data. The variables used for clustering were Familiarity with Open Banking, Usage of Open Banking, and Internet banking usage, chosen because they directly reflect participants’ engagement with and intention to adopt digital banking services, making them key indicators of behavioural segmentation in Open Banking studies. These variables were treated as continuous and standardized prior to clustering to ensure comparability of scale.

The agglomeration schedule was analyzed using hierarchical cluster analysis to determine the optimal number of clusters in the dataset. This method involves progressively merging cases or clusters based on their similarity, measured by the increase in agglomeration coefficients at each stage. Once the number of clusters was determined from the dendrogram and agglomeration schedule, k-means clustering was applied to assign each respondent to a cluster. K-means clustering was selected for its robustness in refining cluster membership and optimizing within-cluster homogeneity (Everitt et al., 2011). The final clusters were then profiled using crosstabulations of demographic variables, including age, gender, marital status, education level, and monthly income, to provide a clear overview of the characteristics associated with each behavioural segment.

The demographic characteristics were considered in the analysis as it is widely recognised as key determinants of financial service adoption and financial behaviour. Prior

research has shown that demographic factors influence individuals' financial decision-making, financial literacy, and technology adoption tendencies, particularly in digital financial services and financial technology contexts (Lusardi & Mitchell, 2014; Yang, Hu & Huang, 2023).

Demographic variables are frequently used in financial services segmentation because they capture structural differences in consumers' economic capacity, life stage, and financial responsibilities, which may shape their attitudes toward new financial innovations such as Open Banking. For example, income and education are often associated with financial capability and access to financial products, while age and marital status may reflect differences in financial needs, risk tolerance, and digital engagement.

Although other potential segmentation variables such as general technology usage or facilitating conditions could have been considered, these variables were not included in the clustering analysis. Facilitating conditions were not included in the structural model because the study examines behavioural intention rather than actual usage, consistent with prior extensions of the UTAUT framework which suggest that facilitating conditions are more relevant when explaining actual technology use rather than intention (Venkatesh et al., 2003). Consequently, demographic variables were considered more appropriate for segmentation purposes, as they allow the identification of meaningful consumer groups without overlapping with the psychological constructs already examined in the structural model.

Table 6.4.1 presents the demographic and behavioural characteristics of the three clusters identified in the analysis, namely *Emerging Users* (Cluster 1), *Potential Adopters* (Cluster 2), and *Engaged Users* (Cluster 3). The result was discussed by cluster to provide clearer insight into the distinct profiles of respondents in each segment and their differing levels of engagement with Open Banking.

Table 6.4.1: Cluster Analysis on Demographic and Banking Behaviour Segmentation Results

Demographic / Behavioural Variable	Category	Emerging Users	Potential Adopters	Engaged Users	Total
Gender	Male	60	21	77	158
	Female	80	23	80	183
Age	18–24	18	16	32	66
	25–34	42	10	57	109
	35–44	38	13	45	96
	45–54	32	3	20	55
	More than 55	10	2	3	15
Marital Status	Married	80	18	98	196
	Widowed	1	0	4	5
	Divorced	9	2	3	14
	Never married	50	24	52	126
Level of Education	Less than high school	5	2	10	17
	High school graduate	52	13	43	108
	Bachelor’s degree	62	19	71	152
	Master’s degree	12	6	18	36
	Professional certificate	9	2	13	24
	Doctorate	0	2	1	3
	Post-doctorate	0	0	1	1
Monthly Income	Less than RM2,000	27	9	22	58
	RM2,000 – RM3,999	53	18	42	113
	RM4,000 – RM5,999	27	7	41	75
	RM6,000 – RM7,999	15	6	23	44
	More than RM8,000	18	4	29	51
	Behavioural Variables (Mean)	Familiarity with Open Banking	2.30	3.18	3.80
Usage of Open Banking		2.68	3.52	4.30	–
Usage of Internet Banking		4.69	2.23	4.73	–
Total Respondents		140	44	157	341

Cluster 1, labelled as *Emerging Users*, comprises 140 respondents and is characterized by low familiarity ($M = 2.30$) and low usage of Open Banking ($M = 2.68$), despite high Internet

banking usage ($M = 4.69$). This cluster is slightly female-dominated and primarily consists of adults aged 25–44, mostly married, with moderate educational attainment (mostly Bachelor's and High school graduates) and lower- to middle-income levels (predominantly RM2,000–RM3,999). The high Internet banking usage indicates digital readiness, but low OB adoption suggests a lack of awareness or perceived complexity.

This cluster aligned with findings by Wang et al. (2022) who reported that digital literacy alone does not guarantee Open Banking adoption; awareness and understanding of the service are critical determinants. This segment represents latent potential users, suggesting that targeted awareness campaigns, trust-building initiatives, and simplified onboarding processes could facilitate adoption, particularly among female and married respondents, echoing prior research emphasizing the importance of tailored communication for different demographic segments (Alalwan, 2018). Therefore, this segment represents latent potential users who could adopt OB with targeted awareness campaigns and trust-building initiatives.

Cluster 2, labelled *Potential Adopters*, includes 44 respondents and is characterized by moderate Open Banking familiarity ($M = 3.18$) and usage ($M = 3.52$), but surprisingly low Internet banking usage ($M = 2.23$). This group is nearly gender-balanced and consists mostly of younger adults aged 18–34, predominantly unmarried, with bachelor's or master's degrees, and lower-income levels (primarily RM2,000–RM3,999). The combination of moderate Open Banking engagement with low usage of internet banking suggests that these respondents are experimental users, possibly adopting Open Banking as a convenient alternative to conventional Internet banking. This cluster represents early adopters who are

motivated by novelty or exploration and may be responsive to targeted incentives and educational programs to encourage sustained Open Banking adoption.

This finding aligns with studies by Gomber et al. (2018) and Shaikh & Karjaluo (2020), which highlighted that early adopters are often motivated by innovation, convenience, and the novelty of new financial services rather than prior digital banking experience. This cluster indicates a segment that could be nurtured through educational programs, incentives, and demonstrations of OB benefits, particularly targeting younger, unmarried users who are more exploratory in their financial behaviours.

Cluster 3, labelled *Engaged Users*, is the largest group with 157 respondents, showing high Open Banking familiarity (M = 3.80) and usage (M = 4.30), alongside high Internet banking usage (M = 4.73). This cluster is nearly equally split by gender, with respondents predominantly aged 25–44, mostly married, highly educated (majority holding bachelor's degrees), and generally higher-income earners (RM4,000 and above). Members of this cluster are digitally confident and financially capable, reflecting regular and sophisticated engagement with Open Banking services.

This aligns with prior research suggesting that high digital literacy, financial confidence, and disposable income are strong predictors of Open Banking adoption (Wang et al., 2022; Pak et al., 2026). These patterns are consistent with prior research emphasizing that financial knowledge and digital literacy are prerequisites for adopting digital financial services. Gilster (1997) and Martin and Grudziecki (2006) note that digital competency underpins effective financial decision-making, while van Deursen and van Dijk (2011) reported that individuals with better digital skills are more likely to adopt digital services. Similarly, Wang et al. (2022) argued that digitally literate individuals pay greater attention to finance-

related information and exhibit higher risk tolerance for financial services. This segment represents the core Open Banking user base, ideal for advanced product offerings, personalized services, and loyalty-building strategies. Banks may leverage this segment as engagement is strongly correlated with both financial capability and technological proficiency.

6.5 Results of Statistical Analysis

The analysis of the research model shown in Figure 6 below was conducted using the Structural Equation Modelling (SEM) technique, employing AMOS version 24.0 for hypothesis testing. In adherence to the recommendations of Anderson and Gerbing (1988), the study employed a two-step approach. Initially, the measurement model was examined to verify the reliability and validity of the instruments used. Following this, the structural model was assessed to evaluate the proposed research hypotheses as illustrated in Figure 2.8.1 in Chapter 2.

6.6 Measurement Model Analysis

Confirmatory Factor Analysis (CFA) was computed using AMOS to test the measurement models. As part of confirmatory factor analysis, factor loadings were assessed for each item as shown in Table 6.5.1.

6.6.1 Reliability Analysis

The reliability and internal consistency of the constructs were examined through Cronbach's Alpha and Composite Reliability values. Cronbach's Alpha for each construct in the study was found to be above the required threshold of 0.70 (Nunnally & Bernstein, 1994; Hair et al., 2010). According to Hair et al. (2010), a benchmark of 0.70 is acceptable for composite

reliability values, while values in the range of 0.60 to 0.70 are acceptable in exploratory research (Hair et al., 2014). In this study, composite reliabilities ranged from 0.6842 to 0.9014, which are within the acceptable range. Furthermore, construct reliability was established for each construct in the study, as presented in Table 6.5.1 and illustrated by the AMOS-generated CFA in Figure 6.6.1.

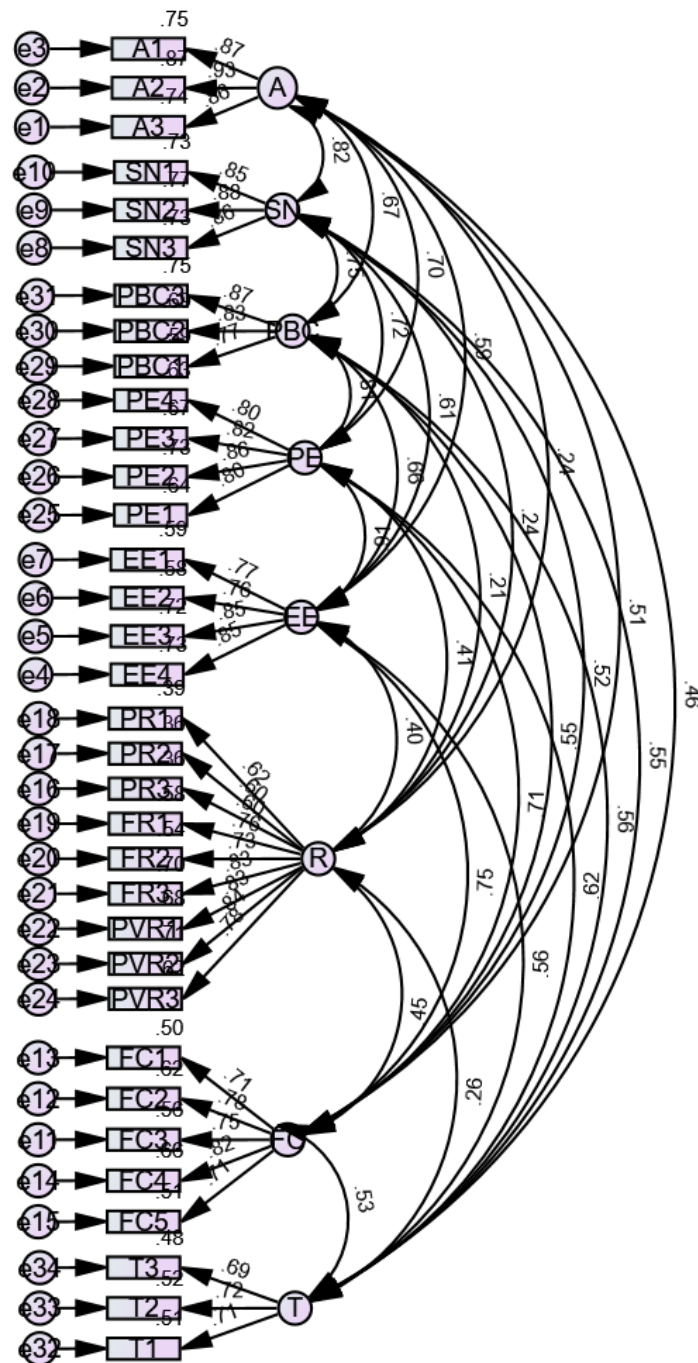


Figure 6.6.1: Generated Confirmatory Factor Analysis (AMOS Graphic)

Table 6.6.1: Model Estimates and Reliability

Constructs	Items	Estimate	C.R.	P	CA (α)
Attitude (A)	A3	0.861	*		0.916
	A2	0.934	23.989	***	
	A1	0.865	21.133	***	
Subjective Norm (SN)	SN3	0.857	*		0.895
	SN2	0.878	20.750	***	
	SN1	0.852	19.794	***	
Perceived Behaviour Control (PBC)	PBC3	0.867	*		0.857
	PBC2	0.828	18.378	***	
	PBC1	0.768	16.462	***	
Performance Expectancy (PE)	PE4	.796	*		0.888
	PE3	.817	17.061	***	
	PE2	.856	18.180	***	
	PE1	.799	16.557	***	
Effort Expectancy (EE)	EE4	0.853	*		0.883
	EE3	0.848	19.663	***	
	EE2	0.760	16.532	***	
	EE1	0.769	16.849	***	
Risk (R)	PR3	0.598	*		0.915
	PR2	0.600	9.367	***	
	PR1	0.621	9.616	***	
	FR3	0.834	11.815	***	
	FR2	0.732	10.836	***	
	FR1	0.762	11.138	***	
	PVR3	0.784	11.355	***	
	PVR2	0.843	11.887	***	
	PVR1	0.825	11.734	***	
Financial Confidence (FC)	FC5	0.747	*		0.867
	FC4	0.784	13.954	***	
	FC3	0.710	12.864	***	
	FC2	0.815	13.463	***	
	FC1	0.713	12.248	***	
Trust (T)	T1	0.713	*		0.751
	T2	0.722	10.327	***	
	T3	0.690	10.259	***	

CR, critical ratio; CA, Cronbach's alpha; *Unstandardized regression weights anticipated as 1; ***Significant level at $p < 0.05$.

Table 6.6.1 presents the model estimates and reliability of the constructs used in the study. The table shows the individual items for each construct, their corresponding factor loadings (Estimate), critical ratios (C.R.), significance levels (p-values), and internal consistency reliability measured by Cronbach's alpha (CA).

All constructs demonstrate satisfactory factor loadings, with most items exceeding the recommended threshold of 0.70, indicating that the items reliably represent their underlying constructs. Critical ratios are all significant at $p < 0.05$, confirming that the factor loadings are statistically meaningful. Attitude (A), Subjective Norms (SN), Perceived Behavioural Control (PBC), Performance Expectancy (PE), Effort Expectancy (EE), Risk (R), Financial Confidence (FC), and Trust (T) all exhibit good internal consistency, with Cronbach's alpha values ranging from 0.751 to 0.916, exceeding the commonly accepted threshold of 0.70 for reliability.

Notably, the Risk construct includes multiple subdimensions, combining perceived risk (PR), financial risk (FR), and privacy risk (PVR) items, which together achieve excellent reliability ($\alpha = 0.915$). Overall, the table confirms that the measurement model is both reliable and valid, providing a solid foundation for subsequent structural model analysis.

6.6.2 Discriminant Validity

Discriminant validity was examined using the method suggested by Fornell and Larcker (1981), which involves a comparison between the square roots of the Average Variance Extracted (AVE) and the inter-construct correlation coefficients. They advocate for an AVE greater than 0.5 to affirm convergent validity, alongside factor loadings also above 0.5. The analysis of Tables 6.6.2 confirmed that all constructs' factor loadings exceeded this threshold, with AVE values between 0.502 to 0.787, thereby validating their reliability. The AVE square roots ranged from 0.708 to 0.887, outperforming the corresponding inter-factor correlations.

Table 6.6.2: AVEs, CR and Correlation Coefficients of Constructs

Construct	A	SN	PBC	PE	EE	R	FC	T	AVE	CR
Attitude (A)	<i>0.887</i>								0.787	0.899
Subjective Norms (SN)	0.818	<i>0.862</i>							0.744	0.887
Perceived Behaviour Control (PBC)	0.673	0.745	<i>0.822</i>						0.676	0.850
Performance Expectancy (PE)	0.700	0.723	0.745	<i>0.817</i>					0.668	0.892
Effort Expectancy (EE)	0.590	0.611	0.662	0.913	<i>0.809</i>				0.654	0.900
Risk (R)	0.240	0.241	0.212	0.409	0.398	<i>0.739</i>			0.547	0.901
Financial Confidence (FC)	0.508	0.521	0.550	0.707	0.750	0.453	<i>0.755</i>		0.570	0.874
Trust (T)	0.457	0.547	0.555	0.622	0.564	0.263	0.529	<i>0.708</i>	0.502	0.684

AVE, average variance extracted; CR, composite reliability; Off-diagonal elements are correlations, and the square root of the AVE value is indicated in italic.

Based on the reliability and validity result, the construct has achieved all the required values. Therefore, the measurement model shows in Figure 6.6.1 is valid to be utilized for the structural equation modelling analysis.

6.7 Structural Model Analysis

Given the satisfactory results of the measurement model, the study proceeded to evaluate the hypothesized relationships by determining the statistical significance of the path coefficients within the structural model. Model-fit measures were used to assess the model's overall goodness of fit, including CMIN/df, CFI, TLI, PNFI, SRMR, and RMSEA, with all values falling within their respective common acceptance levels (Ullman, 2001; Hu and Bentler, 1998; Bentler, 1990). This indicates that the model is a good fit for the data. The eight-factor model (Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy,

Effort Expectancy, Risk, Financial Confidence, and Trust) yielded a good fit, as shown in Table 6.7.1.

According to Crowley and Fan (1997), it is generally accepted that it is crucial to report variety of fit indices, as they each illuminate different facets of model fit even though there are no definitive standards exist for assessing model fit. The Model Chi-Square statistic is considered a critical element of reporting, and it should always be presented (Kline, 2005; Hayduk et al., 2007). Hu and Bentler (1999) recommended a two-index reporting strategy that consistently pairs the Standardized Root Mean Square Residual (SRMR) the Root Mean Square Error of Approximation (RMSEA) with a combinational rule which is RMSEA of 0.06 or lower and a SRMR of 0.09 or lower. Kline (2005) emphasizes the importance of certain indices, specifically advocating for the inclusion of the Chi-Square test, the RMSEA, the CFI, and the SRMR in reports. Boomsma (2000) echoes similar sentiments but further suggests the reporting of squared multiple correlations for each equation.

Considering this guidance, the Chi-Square statistic along with its degrees of freedom and p-value, the RMSEA along with its confidence interval, the SRMR, the CFI, and a parsimony fit index like the Parsimonious Normed Fit Index (PNFI) are reported in this study. These particular indices are preferred because they have demonstrated relative insensitivity to variations in sample size, model misspecification, and parameter estimates, making them more reliable indicators of model fit (Hooper, Coughlan, Mullen, 2008).

Table 6.7.1: Validity of CFA Model Fit

Index Name	χ^2 / df	CFI	IFI	PGFI	PNFI	SRMR	RMSEA
Index Criterion	<5	>.90	>.90	>.50	>.50	<.08	<.10
Actual Value	2.654 (p-value = .000)	.901	.901	.661	.757	.0569	.070

As indicated by the data in Table 6.6.1, the model displayed a chi-square to degrees of freedom ratio (χ^2/df) of 2.654 and an array of fit indices with values suggestive of a good model fit: the Comparative fit Index (CFI) at 0.901, Incremental Fit Index (IFI) at 0.901, the Parsimony Goodness-of-Fit Index (PGFI) at .661 and the Parsimonious Normed Fit Index (PNFI) at .757, the Standardized Root Mean Square Residual (SRMR) at .0569, and the Root Mean Square Error of Approximation (RMSEA) at 0.07.

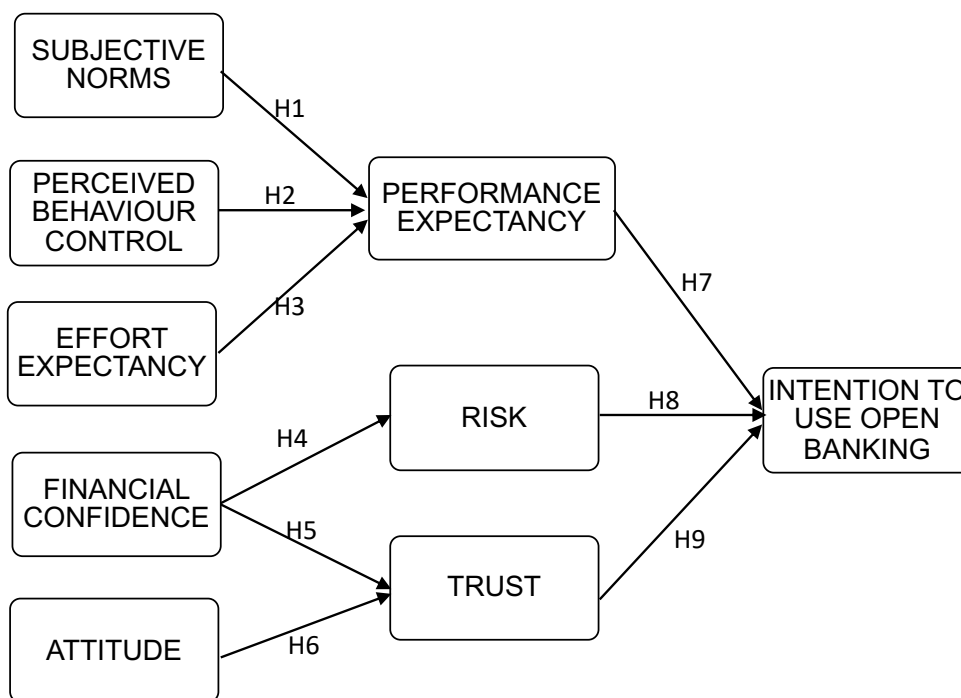


Figure 6.7.1: Research framework

An analysis of the model's path significance presented in Table 6.6.2 concentrated on each specific hypothesis as illustrated in Figure 6.6.1. The results indicated that hypotheses H1, H2, H3, H4, H5, H6, H7, H8, H9 and H10 were statistically significant, with Critical Ratio (CR) values exceeding 1.96 and p-values less than 0.05, thereby supporting these hypotheses.

Table 6.7.2: Summary of Structural Result

Path	Standardized path coefficient	Standard Error	Critical Ratio	p-value	Results
H1: Subjective Norms ---> Performance Expectancy	.094	.048	1.962	.050	Accept
H2: Perceived behaviour control ---> Performance Expectancy	.291	.055	5.308	***	Accept
H3: Effort Expectancy ---> Performance Expectancy	.673	.054	12.442	***	Accept
H4: Financial Confidence ---> Risk	.496	.066	7.501	***	Accept
H5: Financial Confidence ---> Trust	.434	.077	5.607	***	Accept
H6: Attitude ---> Trust	.215	.057	3.795	***	Accept
H7: Performance Expectancy --> Open Banking Usage Intention	.540	.074	7.329	***	Accept
H8: Risk ---> Open Banking Usage Intention	-.157	.065	-2.433	.015	Accept
H9: Trust ---> Open Banking Usage Intention	.214	.084	2.542	.011	Accept

In addition to evaluating the structural model, this study looked at how well the path model predicts the underlying latent components by calculating the explained variance (R²) as shown in Table 6.6.3 below. The explanatory power of the research model was examined using the squared multiple correlations (SMC) value which is equivalent to an R² in linear regression (Gefen, Straub, & Boudreau, 2000). Table 6.6.3 below presented the percentage of variance explained by the exogenous variables in the model. The combination of independent variables (performance expectancy, trust and risk) collectively explains a 28% variance in the intention to engage with Open Banking services. Subjective norms and effort expectancy collectively explained 91% of variance for performance expectancy. On the other hand, financial confidence explained 22% of variance for risk while 37% variance of trust were explained by attitude and financial confidence collectively. Besides that, the 21% variance of actual usage of Open Banking were explained by combination of intention and also perceived behaviour control.

Table 6.7.3: Square Multiple Correlation (SMC)

Endogenous Variable	Square Multiple Correlation (SMC) = R ²
Performance expectancy	0.92
Risk	0.22
Trust	0.34
Intention to use Open Banking	0.28

6.8 Result and Discussion

This study aimed to explore the factors that influence the consumer intention to use Open Banking services in Islamic banking institutions in Malaysia. The results indicate that performance expectancy, trust and risk are significant predictors of consumers' intention to use Open Banking services.

6.8.1 Performance Expectancy

Notably, Performance Expectancy ($\beta=0.540$, C.R.=7.329, $p<.005$), emerges as the biggest predictor of Open Banking usage intention, with a high positive coefficient and statistical significance, establishing its crucial role in user intention to adopt. These findings provide empirical support for key constructs proposed in the Unified Theory of Acceptance and Use of Technology, particularly the role of performance expectancy in shaping behavioural intention toward financial technology adoption. This present finding shows that Malaysian consumers are strongly concern on the utility and usefulness of using Open Banking services particularly among the Islamic banking consumers. This result aligned with the past research (Chan et al., 2022; Inder et al., 2022; Alkhwaldi et al., 2022; Rabaa'i, 2021). In addition, the dominant effect of performance expectancy in explaining usage intention of Open Banking is comparable to an empirical study by Chan et el. (2022) towards Australian user in the same context.

The result also comparable with Bajunaied et al. (2023) and Alkhwaldi et al. (2022) in their study on the use of FinTech services. The findings indicate that Saudi Arabian consumers are confident in FinTech services, believing that it greatly enhances their financial tasks (Bajunaied et al., 2023). Similarly, Alkhwaldi et al. (2022) found that performance expectancy is a key factor in predicting users' intention to adopt FinTech services specifically among Jordanian. Therefore, when users find the system useful, they are more likely to develop a stronger intention to use the technology.

However, this result differs from Chen et al. (2023) in the context of contactless services. This may be due to the difference between the consumers' objective of using the financial services. For example, contactless services were used to preserve the usual flow of money for job and daily life where else, Open Banking is used to gain an access to finance and also money management matters. Thus, performance expectancy was much more important in the context of Open Banking services compared to the contactless services.

Even though the direct influence of effort expectancy towards usage intention could not be established in this study, the influence is mitigated through performance expectancy. The result reveals that effort expectancy is the most crucial factors in determining performance expectancy in Open Banking services among Islamic banking consumers in Malaysia ($\beta=0.673$, C.R.=12.442, $p<.005$). In other words, the more user-friendly a technology is, the more valuable it will be considered. Although this was not proven in the original UTAUT model, the positive relationship between effort expectancy and performance expectancy is consistent with a few previous research on Internet and mobile banking and use of ChatGPT (Camilleri, 2024; Chan et al., 2022; Utomo et al., 2021; Tang et al., 2021; Alalwan et al., 2017).

However, this current finding contradicts the study by Mensah et al. (2022) in the context of mobile health service. The study discovered that the performance expectancy of mobile health services is not dependent on effort expectancy. The study that has been conducted on the population of native citizens of Jiangxi Province in China also found that there is no significant effect of effort expectancy on the usage intention of mobile health service. This may be due to their extensive usage of technology-related applications, consumers have developed a better technological ability that make it easy for them to access mobile technology services. Thus, making its impact towards their expectation on the benefit and usefulness of the services.

Furthermore, in the context of banking where the data privacy and financial security is at stake, consumers might prioritize the security and trust over the ease of use of the services. Consumers may be more concerned on how secure and trustworthy the services are compared to how simple it is to use it especially in the services where their personal and financial data is involved. In addition, Islamic banking consumers in Malaysia may already be familiar with digital banking platforms leading to a reduced concern on the effort expectancy in Open Banking services. In this case, the consumers are already accustomed in technology for their Islamic banking services such as using a banking application to manage their accounts and financing aspect, and it may lead them to perceive the effort needed for Open Banking services as manageable thus reducing its impact on intention to use the Open Banking services.

Besides that, the result also shows a positive and significant impact of perceived behaviour control on performance expectancy ($\beta=0.291$, C.R.=5.308, $p<.005$). This result asserts that individuals who believe they possess the resources and capabilities to utilize

technology are more likely to anticipate that it will enhance their performance. The perception of control enhances their confidence in the technology's efficacy, resulting in higher expectations regarding its advantages and utility. The findings of this study also align with existing literature on the role of behavioural control and self-efficacy in shaping performance expectancy and subsequent behavioural intentions (Liu et al., 2022; Sung et al., 2015).

The study by Sung et al. (2015) in the domain of mobile learning demonstrates that self-efficacy or one's confidence in their ability to complete tasks positively influences performance expectancy, thereby enhancing the intention to adopt new technologies. This trend is similarly observed in Liu et al. (2022), who investigated the impact of self-efficacy on user intentions to adopt mobile health (mHealth) services. Their research revealed that individuals with lower self-efficacy perceive mHealth services as complex and are thus less inclined to use them. Conversely, users with a higher sense of self-efficacy views Open Banking services as beneficial and enhanced their expectation on the usefulness of the services on their financial aspect.

In addition, these findings suggest that perceived behavioural control which perceived similarly as self-efficacy plays a significant role in shaping consumer expectations of Open Banking services. Consequently, encouraging self-efficacy among users could become crucial in enhancing more favourable perceptions of Open Banking services, thereby facilitating higher acceptance rates among Islamic banking consumers in Malaysia.

Besides that, the result shows that subjective norms have significant influence on performance expectancy and is strongly supported by SEM analysis ($\beta=0.094$, C.R.=1.962, $p<.005$). In this study, subjective norm plays a role in shaping performance expectancy, as

social pressures and the opinions of others can significantly impact how individuals perceive the usefulness and effectiveness of a technology. This finding aligned with previous study by Chan et al. (2022) on the stronger impact of social influence on performance expectancy compared to its influence on usage intention. In other words, the opinions of peers, family or community members have stronger impact in shaping perceptions of the benefit and value of Open Banking services than they directly drive individuals' intention to adopt it.

Chan et al. (2022) identified that social influence does not only have a direct effect but also an indirect one. It acts as a mediator by shaping performance expectancy, which subsequently influences usage intention. This layered influence positions performance expectancy as a crucial intermediary step in converting social influence into concrete adoption intentions. However, as the influence of subjective norms on usage intention could not be established in this present study, thus the effect was mitigated through performance expectancy to show the relevant of subjective norms in explaining the Open Banking usage intention in this study.

This divergence can be attributed to contextual differences as Chan et al. (2022) study was conducted in a Western, conventional banking environment where technology adoption is less bounded by ethical or religious considerations, allowing peer pressure and societal norms to directly influence behavioural intentions. Conversely, the Malaysian Islamic banking context introduces ethical, religious, and regulatory considerations that moderate the direct impact of social pressure. Consequently, consumers first evaluate whether Open Banking aligns with Shariah principles and perceived performance benefits before translating social influence into adoption intentions.

Besides that, the insignificant of direct influence of subjective norms may be explain by looking at the voluntary versus mandatory context of the technology itself. As established by Venkatesh et al. (2003) and Venkatesh and Davis (2000), the impact of social influence towards adoption intention of technology in voluntary context is often reduced. The adoption of Open Banking services in Malaysia is voluntary among the consumers and also among the financial institutions. Hence, consumers are not required or pressured by institutions to adopt it. Consequently, when people have a choice, it enables them to make a decision based on their personal motivations such as perceived benefit, trust and security, compared to social pressure or norms. Thus, making a subjective norm having a nonsignificant direct impact towards adoption intention.

On the other hand, in a mandatory setting such as in the environment where the adoption of technology is under the government policies or mandates, subjective norm may have a stronger influence. This is because of the people are more often feels the need to follow social norms and expectations to validate their decision. However, the insignificant effect of subjective norms toward the Open Banking usage intention in Malaysian context is quite surprising. Subjective norms are expected to influence intention, as Malaysia is a collectivist society, according to Hofstede (1983). Based on Hofstede (1983), collectivism emphasises the value of a community, and these societies are tightly linked. Nevertheless, Alalwan et al. (2018) suggest that inconsistent results may be attributed to factors such as technology (mandatory or voluntary), country development (developing or developed), technology type (personal or common social able), and individual perception, skills, and experience.

6.8.2 Trust

Based on the result, the second main drivers in user intention to use Open Banking in Islamic banking in Malaysia is trust. Trust ($\beta=0.214$, C.R.=2.542, $p<.05$), has a positive and significant influence on usage intention but the impact was smaller compared to the performance expectancy. This is slightly differing from Araluze and Plaza (2023), where trust is the most relevant factor in adopting open banking with highest total weight of 0.955. However, in Chan et al. (2022), trust only has an indirect effect toward usage intention through performance expectancy and effort expectancy while the direct effect is insignificant. Nevertheless, this finding aligned with Oloveze et al. (2023) where trust increases the intention of bank customers to adopt open banking and mobile-banking among Indonesian (Saparudin et al., 2020) thereby making trust factor a necessary variable despite the low coefficient value.

This finding established on the important of trust factor in determining the consumer adoption particularly in the context of Open Banking in Islamic banking in Malaysia. Islamic banks are operating under the principles of Shariah which emphasize on the ethical practices, transparency and the risk-sharing. Islamic banks must be transparent about how data is used, stored, and shared, as well as how services align with Shariah principles. This aspect of Islamic banks build trust among consumers and showing them that Open Banking services operates with integrity and aligns with Islamic banking principles. Other than that, the consumers also believed that the third-party involves are also adhered to these principles. As a result, the consumers feel more inclined toward adopting the services knowing that both their personal and financial data is safeguarded and used responsibly.

Furthermore, trust among consumers positively influence by their confidence on their financial knowledge (H4: $\beta_4 = 0.434$; $p < 0.005$). The result shows that people who feel

confident in their financial knowledge and abilities are more likely to trust the safeguard of their personal financial information in Open Banking service. This finding aligned with previous research on financial confidence and trust by Adil et al. (2023) and Letamendia and Poher (2020). Letamendia and Poher (2020) established the positive impact of financial literacy on individuals' trust in the financial system and focusing on three types of knowledge which are basic financial literacy, knowledge of investment products, and awareness of the role of financial institutions. In this context, individuals who possess a more comprehensive and explicit understanding of various financial assets and instruments tend to have greater trust in the financial system and banks.

However, this present finding contradicts Chan et al. (2022) where the financial literacy was reported negatively affects usage intention of Open Banking services. According to Chan et al. (2022), greater financial literacy makes people less likely to accept Open Banking at first because they are more likely to be sceptical. However, the contrast between Chan et al. (2022) and current result is plausible, as Chan et al. (2022) focus on the objective financial literacy while this study focuses on the subjective financial literacy which is financial confidence.

This result indicates that individuals with higher financial confidence which is those who feel assured in their financial knowledge and capabilities are more likely to trust that their personal financial information will be safeguarded within Open Banking services. This confidence reduces the concerns about data privacy and security, as financially knowledgeable users feel better equipped to assess and understand the protective measures in place. Consequently, their trust in Open Banking services increases, as they perceive that their data is handled responsibly and securely by their Islamic banks.

Another factor that influences trust is the consumers' attitude ($\beta=0.215$, C.R.=3.795, $p<.05$). This finding shows that trust is influenced by attitude as people who have a positive attitude towards Open Banking services have more trust and more likely to have an intent to use it. Besides that, positive perception can boost confidence and lessen scepticism, which strengthens the feeling of trust. This finding aligned with previous study by Arfansyah and Marsasi (2023) on the effect of attitude and trust in the context of modern market industry where attitude influence trust among the consumers.

6.8.3 Risk

The result also shows that risk negatively influences the intention to use Open Banking ($\beta=-0.157$, C.R.=-2.433, $p<.05$). It has been established that risk has a detrimental impact on usage intention, and the result is consistent with literature (Oloveze et al., 2023; Rahardja et al.,2023; Chan et al., 2022). While this association has been verified, its impact is quite low and can be mitigated by financial confidence. Open Banking performs financial services that rely heavily on the transmission of personal financial data, hence the relatively minor influence of perceived risk on adoption intention is somewhat surprising.

This present finding is aligned with a cross-sectional study by Oloveze et al. (2023) on the effect of privacy concern on the Open Banking adoption intention among banking consumer in Nigeria. The study confirmed the theory on negative relationship between perceived risk and Open Banking adoption. It shows that concerns about data breaches, fraudulent activities by banks, loss of control over personal data, and the misuse of information by FinTech companies deter users from adopting Open Banking. These fears, along with the potential negative consequences of granting consent to Open Banking systems, reduce users' intention to engage in Open Banking services.

Nevertheless, a study by Ipsos (2019) shows that Malaysian consumers are in the dark about how their personal information is being used and most of them do not sure on how organizations use their personal data. Half of the respondents in the study are unsure what companies do with their personal information. But on the contrary, half of them also agree that allowing companies to use the data they collect about them is something that helps provide the best products, services and information that meets people's needs. Therefore, it can be asserted that Malaysian consumers may consider the utility and benefit of using Open Banking services are much more important compared to the risk of using the services. Thus, it explains on the relatively weak impact on the usage intention of Open Banking among Malaysian consumers.

This study also found that the effect of risk towards the intention to adopt Open Banking services in Islamic banks are mitigated by their financial confidence ($\beta=0.496$, C.R.=7.501, $p<.05$). This finding aligns with the research of Blanchett et al. (2023), which indicates that higher levels of financial confidence are associated with increased risk tolerance in financial behaviours. Additionally, the results corroborate the work of Mudzingiri et al. (2018), who concluded that financial literacy positively impacts savings behaviour. Their study highlighted a significant three-way interaction between financial literacy, risk aversion, and financial confidence that influences investors' savings decisions.

Further supporting this, Ananda et al. (2024) examined the effect of financial literacy on savings behaviour, specifically focusing on the moderating roles of financial confidence and risk aversion. It was revealed that risk aversion significantly moderates the relationship between financial literacy and savings behaviour, with financial confidence playing a crucial role in this dynamic. Consequently, individuals with higher financial confidence tend to

perceive risk as manageable, leading them to engage in activities that may be considered high risk. This perspective emphasizes the importance of enhancing financial confidence to encourage more active participation in financial opportunities offered particularly through Open Banking services.

6.9 Result on Sub-sample Analysis

Sub-sample analyses were conducted for gender, age, marital status, education level, and income level to explore whether demographic factors influence the intention to use Open Banking among the Malaysian Islamic banking consumers. These analyses aimed to identify whether adoption intention differed across groups and to provide insights into potential targeting strategies for Islamic banking institutions in Malaysia.

6.9.1 Gender and Intention to Use Open Banking

An independent-samples t-test was conducted to compare the intention to adopt Open Banking between male and female respondents. Levene's test indicated that the assumption of equal variances was violated, $F(1, 339) = 4.42, p = .036$, so the results for unequal variances were interpreted. Based on Table 6.9.1 below, there was no significant difference in intention to adopt Open Banking scores between males ($M = 3.69, SD = 1.05$) and females ($M = 3.74, SD = 0.90$), $t(311.78) = -0.497, p = .619$, two-tailed. The mean difference was -0.053 , 95% CI $[-0.264, 0.158]$, with a very small effect size (Cohen's $d = -0.055$), indicating that gender had a negligible impact on planned adoption of Open Banking in this sample. This indicates that gender does not significantly influence adoption intention, aligning with the Tan et al. (2025), which showed no significant mean differences between males and females and high correlations across gender groups.

Table 6.9.1: Independent Samples t-Test for Intention to Use Open Banking by Gender

Gender	n	M	SD	t	df	p	Cohen's d
Male	158	3.690	1.052	-0.503	339	.308	-0.055
Female	183	3.743	0.905	—	—	—	—

In the context of Islamic banking, where financial products and services are guided by Shariah principles but delivered through standard digital channels, both genders appear equally open to adopting Open Banking services. This suggests that initiatives to promote Open Banking in Malaysia may not need to target males or females differently, as adoption intention seems to be shaped more by factors such as perceived usefulness, trust, and risk rather than demographic characteristics like gender.

6.9.2 Age Group and Intention to Use Open Banking

A one-way ANOVA was conducted to examine whether there were differences in the intention to use Open across different age groups. Descriptive statistics indicated that the youngest group (18–24 years) reported the highest mean intention ($M = 3.85$, $SD = 1.01$), followed by 25–34 years ($M = 3.74$, $SD = 1.03$), 35–44 years ($M = 3.70$, $SD = 0.96$), 45–54 years ($M = 3.62$, $SD = 0.89$), and respondents older than 55 years ($M = 3.47$, $SD = 0.74$).

Table 6.9.2: One-way ANOVA for Intention to Use Open Banking by Age Group

Source of Variation	SS	df	MS	F	p	η^2	95% CI η^2 [Lower, Upper]
Between Groups	2.727	4	0.682	0.715	.582	.008	0.000, 0.025
Within Groups	320.247	336	0.953				
Total	322.974	340					

Note: η^2 = eta-squared. The effect size is very small (.008), indicating that age explains less than 1% of the variance in intention to use Open Banking.

The ANOVA results shown in Table 6.9.2, revealed no statistically significant differences in intention across age groups, $F(4, 336) = 0.715$, $p = 0.582$. Effect size estimates were extremely small ($\eta^2 = 0.008$), indicating that age accounts for less than 1% of the variance in intention. Post hoc tests (Tukey HSD and Games-Howell) confirmed that no

pairwise comparisons were significant, and the homogeneous subsets analysis further indicated that all age groups fall into a single subset.

Although the descriptive statistics suggest a slight decreasing trend in intention with age, the ANOVA indicates that this trend is not statistically meaningful. This finding suggests that age does not significantly influence Malaysian consumers' intention to adopt Open Banking. One possible explanation is that digital literacy and access to digital financial services are widespread across age groups in Malaysia. With the proliferation of smartphones, mobile banking apps, and internet connectivity, even older consumers are increasingly familiar and comfortable with digital banking platforms (Bohari, 2024).

From a theoretical perspective, this result contrasts with some studies using UTAUT or TAM, which often find that younger users adopt technology at higher rates due to familiarity and confidence with digital tools (Magsamen-Conrad et al., 2015). In the Malaysian Islamic banking context, however, homogeneity in digital exposure and financial service usage across age groups may mitigate these age-related differences. From a practical standpoint, this suggests that banks do not need to segment their Open Banking promotion strategies based on age. Efforts may be better focused on universally relevant factors such as trust, perceived usefulness, ease of use, and risk mitigation, which influence intention across all demographic segments.

Finally, the slight decreasing trend in mean intention among older respondents, although non-significant, may warrant future qualitative investigation to explore whether barriers such as comfort with technology, perceived complexity, or risk aversion influence older consumers' adoption behaviour. This could help banks identify ways to make Open Banking more inclusive.

6.9.3 Marital Status and Intention to Use Open Banking

The ANOVA results shown in Table 6.9.3 below for marital status were also not significant ($F = 0.449$, $p = 0.718$, $\eta^2 = 0.004$), indicating that married, never married, divorced, and widowed respondents had comparable adoption intentions. Small subgroup sizes for widowed and divorced respondents may have contributed to reduced statistical power, limiting the ability to detect differences.

Table 6.9.3: One-way ANOVA for Intention to Use Open Banking by Marital Status

Source	SS	df	MS	F	p	η^2	95% CI η^2 [Lower, Upper]
Between Groups	1.286	3	0.429	0.449	.718	.004	0.000, 0.018
Within Groups	321.688	337	0.955				
Total	322.974	340					

Note: η^2 = Eta-squared; effect size is very small (.004). Welch's robust test confirmed no significant differences between groups, $F(3, 17.05) = 0.435$, $p = .731$. Post hoc comparisons (Tukey HSD and Dunnett T3) indicated no significant pairwise differences among marital status groups.

Nonetheless, the findings are consistent with prior studies showing that household composition does not strongly influence digital banking adoption, as personal attitudes and perceived benefits outweigh marital or household characteristics. For example, Chauhan et al. (2016) found that marital status did not significantly affect e banking adoption, while attitudinal and technology specific predictors were more influential in explaining adoption intentions. Considering this, banks should focus on enhancing perceived value and trust rather than targeting marital status in promotional campaigns on Open Banking.

6.9.4 Educational Level and Intention to Use Open Banking

Table 6.9.4 presents the results of a one-way ANOVA examining differences in intention to use Open Banking across participants with different education levels. The analysis revealed a statistically significant difference between groups, $F(6, 334) = 2.15$, $p = .047$. The effect size, measured by eta-squared ($\eta^2 = .037$), indicates a small effect of education level on intention

to use Open Banking. Post hoc analyses could not be robustly conducted for some groups due to small sample sizes (e.g., Doctorate, Post-doctorate), therefore pairwise comparisons were not fully interpretable. Although statistically significant, the effect size was small, and some education groups had very few participants, thus limiting the practical interpretation of these differences.

Table 6.9.4: One-way ANOVA for Intention to Use Open Banking by Education Level

Source of Variation	SS	df	MS	F	p	η^2	95% CI η^2 [Lower, Upper]
Between Groups	12.022	6	2.004	2.152	.047	.037	0.000, 0.068
Within Groups	310.952	334	0.931				
Total	322.974	340					

Note: η^2 = Eta-squared; small effect size (.037). Robust tests of equality of means could not be performed due to small sample sizes in some groups.

This suggests that although formal education may support digital literacy and understanding of financial services, however, it is not a strong predictor of adoption in this context. Although the ANOVA reached statistical significance, the small effect size indicates that education accounts for only a minor portion of the variance in adoption intention. This suggests that while education may play a role, other factors such as attitudes, perceived risk, trust, or digital literacy are likely more influential in shaping consumers' adoption of Open Banking.

These findings partially support technology acceptance frameworks (e.g., UTAUT), which suggest that individual characteristics, including education, can influence technology adoption. However, the small effect size aligns with prior studies showing that demographic variables alone are often weak predictors of adoption intention, highlighting the importance of integrating behavioural and contextual factors (Venkatesh et al., 2003; Alalwan et al., 2017).

6.9.5 Income Level and Intention to Use Open Banking

A one-way ANOVA was conducted to examine whether monthly income influences consumers' intention to use Open Banking. The results in Table 6.9.5 indicated that there were no statistically significant differences in adoption intention across income groups, $F(4, 336) = 2.11, p = .079, \eta^2 = .025$, with a very small effect size. The robust Welch test confirmed this result, $F(4, 140.29) = 2.09, p = .085$. Post hoc analyses using Tukey HSD and Dunnett T3 confirmed that no pairwise comparisons between income groups reached significance, and homogeneous subsets indicated substantial overlap in mean intention scores across groups.

Table 6.9.5: One-way ANOVA for Intention to Use Open Banking by Income Level

Source	SS	df	MS	F	p	η^2	95% CI η^2 [Lower, Upper]
Between Groups	7.927	4	1.982	2.114	.079	.025	0.000, 0.055
Within Groups	315.046	336	0.938				
Total	322.974	340					

Note: η^2 = Eta-squared; effect size is small (.025). Welch's robust test confirmed no significant differences between income groups, $F(4, 140.29) = 2.093, p = .085$. Post hoc tests (Tukey HSD and Dunnett T3) indicated no significant pairwise differences.

These findings suggest that monthly income does not meaningfully influence consumers' intention to adopt Open Banking. While higher-income individuals may display slightly higher adoption intentions descriptively, the small effect size and lack of statistical significance indicate that other factors such as attitudes toward technology, perceived usefulness, trust, and perceived risk are likely more important determinants of adoption. This aligns with prior research in technology acceptance, which has found that demographic variables like income are often weak predictors of adoption behaviour, whereas behavioural and perceptual factors tend to have stronger explanatory power (Venkatesh et al., 2003; Alalwan et al., 2017). From a practical perspective, these results suggest that strategies to

promote Open Banking should focus on improving user perceptions, trust, and ease of use rather than targeting consumers based solely on income level.

Taking everything into account, the sub-sample analyses indicate that demographic factors have minimal influence on Open Banking adoption intention among Islamic banking customers in Malaysia. These non-significant results can be explained by high digital literacy, widespread smartphone ownership, and baseline mobile banking access, which reduce variance across demographic groups. The only small significant effect observed for education underscores that while higher education may slightly enhance intention, behavioural and attitudinal factors remain more important determinants (Venkatesh et al., 2003; Gomber et al., 2018).

From a practical perspective, Islamic banks should prioritize strategies that enhance trust, perceived usefulness, and ease of use, rather than focusing on demographic targeting. These findings suggest that adoption campaigns can be inclusive across gender, age, marital status, education, and income, as the primary drivers are psychological and behavioural rather than demographic.

6.10 Conclusion

In conclusion, this chapter offers an insight into the intention to use Open Banking among Islamic Banking consumers in Malaysia. The demographic profiling and cluster analysis provided a deep understanding of the respondents' backgrounds and their banking behaviours, revealing three distinct segments based on various socio-demographic and behavioural criteria. The clusters revealed in this analysis provide useful insights for developing tailored marketing tactics to promote Open Banking among different consumer segments. Understanding each cluster's distinct demographics and banking behaviour allows

marketers to personalize communication campaigns to specific demands and preferences. For example, a cluster that is comfortable with and frequently uses internet banking may be more sensitive to digital and mobile-based advertisements emphasizing the convenience and sophisticated capabilities of Open Banking.

On the other hand, a cluster with lower familiarity may benefit from educational initiatives aimed at fostering trust and demonstrating the practical benefits of Open Banking in daily financial management. Furthermore, these insights can be used to influence product customization, ensuring that features are relevant to each segment's financial behaviour, such as providing budgeting tools for budget-conscious segments or personalized advice for those looking for financial planning. By exploiting these clusters, banks may increase engagement, adoption rates, and long-term loyalty by providing relevant, personalized solutions that address the specific needs of each consumer segment.

The research model, highlighting performance expectancy, trust, and risk as significant predictors of consumers' intention to use Open Banking services, was shown to be significant. The initial phase involved appraising the measurement model to establish the reliability and validity of the instruments deployed. Subsequently, the structural model was scrutinized to ascertain support for the research hypotheses, following the two-phase approach recommended by Anderson and Gerbing (1988).

The study demonstrates the crucial role of performance expectancy as a determinant of user intention, a finding consistent with prior research. Indirect effects analyses indicate that users' attitudes and financial confidence, while not directly impacting usage intention, influence it through trust. Similarly, subjective norms, perceived behaviour control, and effort expectancy affect intention through performance expectancy.

Despite these contributions, several limitations must be acknowledged. The cross-sectional survey design restricts the ability to draw causal inferences, and although SEM and CFA provide robust assessments of relationships and measurement validity, they remain correlational. Sample representation poses another constraint, as certain demographic groups, such as widowed participants or specific income brackets, were underrepresented, which may limit the generalizability of the findings to all Islamic banking consumers in Malaysia. Cluster analysis results are sensitive to the choice of variables and methods, meaning alternative approaches could reveal different segmentation patterns. In some statistical analyses, assumptions such as homogeneity of variances were not fully met, which may affect the precision of subgroup comparisons. Additionally, the structural model may not capture all external factors influencing adoption, such as emerging digital financial technologies, broader cultural influences, or varying levels of financial literacy. Finally, the contextual specificity of the study, focused on Islamic banking customers in Malaysia, limits the applicability of findings to conventional banking contexts, other countries, or non-Islamic financial systems.

Overall, while the study provides valuable insights into the factors influencing Open Banking adoption, the limitations outlined above should be considered when interpreting the findings. The next chapter will focus on discussing the key research findings in detail, articulating conclusions, proposing directions for future research, and highlighting both the theoretical and practical contributions of the study.

CHAPTER SEVEN

Conclusion

7.1 Introduction

This chapter provides a comprehensive summary of the study, integrating the key findings and their implications. It highlights the contributions of the research, discusses the limitations, and proposes directions for future studies. The chapter concludes by reflecting on the significance of the research for understanding consumer acceptance of Open Banking in Islamic banking institutions in Malaysia.

7.2 Summary of the Key Findings

This section presents a concise synthesis of the key findings from the study, highlighting the factors influencing consumer acceptance of Open Banking in the context of Malaysian Islamic banking institutions. Drawing on both qualitative and quantitative analyses, the findings reveal the relative importance of cognitive, affective, and contextual factors in shaping user intentions and behaviours. These results provide a comprehensive overview of the patterns and relationships observed in the data, offering insights into both the theoretical understanding and practical implications of Open Banking adoption among the consumer of Malaysian Islamic banking.

7.2.1 Study 1

The thematic analysis in Study 1 identified seven key dimensions that provide insights into the adoption and implementation of Open Banking which are the Open Banking concept,

centrality of APIs, perceived value, perceived risk, trust, impact on FinTech development, and regulatory considerations.

Based on the findings, Open Banking is primarily perceived as a collaborative and strategic business model rather than merely a regulatory requirement. It fosters partnerships between traditional banks and FinTech firms, enabling market expansion, enhanced service delivery, and customer acquisition. Participants emphasized its role as a dynamic, platform-based model that facilitates innovation and competition, positioning banks as service enablers within a broader financial ecosystem.

Besides that, APIs are central to Open Banking, serving as the technological backbone that enables integration, collaboration, and scalable business models. While APIs provide the infrastructure for Open Banking, participants highlighted that adoption in Malaysia is contingent on organizational readiness, innovation culture, and regulatory support, with human and institutional factors significantly influencing their effective use.

Another key finding from Study 1 is the perceived value as a key driver of adoption. Consumers are more likely to engage with Open Banking when it delivers practical benefits, such as improved convenience, personalized financial services, access to loans, and cost efficiencies. Value creation extends to both consumers and banks, where banks can leverage shared data to develop new products, optimize operations, and enhance financial management. However, adoption remains constrained by limited consumer awareness and understanding of data sharing and its benefits.

Perceived risk, particularly regarding data security, privacy, financial loss, and service performance, is a critical consideration. While some risks are inherent to Open Banking,

others relate to lack of adoption and innovation, organizational failures, or cyber threats. Participants emphasized the importance of mitigating these risks to ensure consumer confidence.

Trust emerged as another important factor in adoption, shaped by perceptions of data security, utility, and user experience. High perceived utility can offset lower trust, while low utility inhibits adoption even in the presence of trust. Therefore, ensuring a robust data protection, secure transactions, and transparent data-sharing purposes is essential for fostering trust in Open Banking services.

Other than that, Open Banking significantly impacts FinTech development by driving innovation, facilitating new products and services, and promoting competition. Participants noted its role in transforming traditional banking mindsets and opening opportunities for forward-thinking approaches in financial services.

Finally, regulatory frameworks play a pivotal role in shaping Open Banking ecosystems. Regulators influence fairness, standardization, and innovation while ensuring consumer protection. However, participants highlighted that regulators alone are insufficient; solution providers and FinTech firms are equally critical in ensuring effective implementation and adoption.

Overall, the findings from Study 1 suggest that successful Open Banking adoption depends on the interplay between technological infrastructure, perceived value, risk management, trust, regulatory support, and organizational readiness, with collaboration between banks and FinTech firms being central to creating a dynamic, consumer-centric financial ecosystem.

7.2.2 Study 2

Study 2 was conducted on the initial quantitative sample collected from the Malaysian population, provides several important insights into consumer perceptions and behaviours regarding Open Banking. The data, informed by prior interviews and the literature on technology acceptance, reveal patterns in familiarity, usage, intention, and engagement with Open Banking, as well as the role of perceived risk and other behavioural constructs.

The respondent profile shows a slight overrepresentation of females and younger adults aged 25–34 years, along with a predominance of married and highly educated participants, with more than half holding a bachelor's degree or higher. Income distribution indicates adequate representation of middle-income groups, while lower- and higher-income respondents are slightly underrepresented. Overall, the sample aligns with the study's focus on potential Open Banking users, primarily younger, educated, and digitally engaged adults.

Descriptive analyses in Study 2 also indicate that respondents' familiarity with Open Banking is moderate, reflecting limited awareness among a portion of the sample. Despite this, usage and intention to adopt Open Banking were slightly higher, suggesting that even with moderate familiarity, respondents show moderate engagement and a generally positive inclination toward future adoption. Among behavioural constructs, Financial Confidence, Effort Expectancy, and Performance Expectancy received the highest ratings, indicating that respondents feel capable in managing their finances and perceive Open Banking as both beneficial and easy to use. Trust, by contrast, received slightly lower ratings, reflecting some hesitancy regarding the reliability or security of Open Banking services.

Next, the cluster analysis identified three distinct consumer segments based on engagement with Open Banking and internet banking usage. Emerging Users exhibit low

familiarity with Open Banking but high internet banking usage, highlighting a digitally capable group with limited exposure. Potential Adopters show moderate engagement and lower reliance on traditional internet banking, representing a transitional segment receptive to Open Banking. Engaged Users demonstrate the highest familiarity and usage, predominantly younger, highly educated, and higher-income respondents, underscoring the relationship between education, financial literacy, and readiness to adopt innovative financial services.

A Confirmatory Factor Analysis (CFA) and reliability testing demonstrated that all constructs, including Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust, exhibited strong measurement properties. Factor loadings, Cronbach's alpha, and Composite Reliability scores confirmed internal consistency and construct reliability. The Risk construct, encompassing perceived, financial, and privacy risks, exhibited particularly strong reliability, highlighting its comprehensive representation in the Open Banking context. Discriminant validity was established via the Fornell–Larcker criterion, and Average Variance Extracted (AVE) values confirmed that each construct is conceptually distinct. Model-fit indices indicated that the eight-factor CFA model provides a good fit, supporting the robustness of the measurement model for subsequent structural equation modelling.

A correlation analysis revealed that most cognitive, social, and affective constructs including Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, and Trust were positively and significantly associated with the intention to adopt Open Banking, whereas Risk was negatively correlated. Interestingly, Financial Confidence did not significantly influence adoption intention, suggesting that self-assessed financial knowledge alone does not drive adoption behaviour in this sample.

Stepwise regression further identified Attitude, Performance Expectancy, Trust, and Risk as significant predictors of adoption intention. Positive attitudes and expectations of performance benefits increase intention to adopt Open Banking, while greater trust similarly encourages adoption. In contrast, perceived risk has a strong negative effect, highlighting its deterrent influence on user behaviour. The model explained 46.2% of the variance in intention, indicating moderate but meaningful predictive power.

In summary, the key findings highlight several important points. First, consumer awareness of Open Banking remains moderate, but intention and usage indicate readiness to adopt, particularly among younger, educated, and digitally proficient adults. Second, cluster analysis demonstrates distinct user segments that differ in familiarity, usage, and digital banking behaviour, suggesting the need for targeted educational and marketing strategies. Third, the measurement model is both reliable and valid, providing a robust foundation for examining the relationships between behavioural constructs, perceived risk, and adoption intention. Finally, cognitive (Attitude, Performance Expectancy), affective (Trust), and risk perceptions emerge as critical determinants of Open Banking adoption, underscoring the interplay of psychological, behavioural, and demographic factors in shaping adoption patterns in the Malaysian context.

7.2.3 Study 3

Study 3 offers a comprehensive understanding of the factors influencing Open Banking usage intention among Malaysian Islamic banking consumers with larger sample size. Based on the result, adoption is shaped by an interplay of cognitive, affective, and contextual factors. Cognitive factors, including perceived ease of use, reliability, and perceived value, influence rational evaluation of Open Banking services. Affective factors, particularly trust and

perceived risk, affect emotional responses, highlighting the importance of confidence and psychological comfort in technology-mediated financial environments. Contextual factors, such as regulatory awareness, social influence, and socio-demographic characteristics, further shape adoption, indicating that external and environmental considerations are integral to understanding consumer behaviour.

The demographic analysis in Study 3 shows the sample with predominantly comprised young to middle-aged adults with relatively high educational attainment and a balanced gender distribution, reflecting a segment of consumers who are digitally literate, financially aware, and receptive to technological innovations. Marital and income profiles indicate that respondents represent a mix of family responsibilities and financial capacities, implying that Open Banking adoption is influenced not only by individual technology readiness but also by practical financial needs and the desire for accessible, integrated financial management tools.

Cluster analysis identified three distinct user segments, reflecting varying levels of readiness and engagement with Open Banking. Emerging Users exhibited high Internet banking usage but low Open Banking awareness, representing latent potential adopters who could benefit from targeted awareness and trust-building initiatives. Potential Adopters were younger, moderately familiar with Open Banking, but less engaged with Internet banking, suggesting early adopter tendencies driven by novelty and convenience. Engaged Users formed the largest cluster, characterized by high familiarity and usage of both Open Banking and Internet banking, representing digitally confident and financially capable consumers suited for advanced services. These clusters shows that younger, educated, and digitally literate individuals are most likely to adopt Open Banking, while segments with readiness but low awareness present opportunities for targeted interventions to increase adoption.

The Confirmatory Factor Analysis (CFA) also confirmed that all constructs including Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust demonstrated strong reliability and validity. The structural model indicated a good fit and revealed that all hypothesized relationships were significant. Structural Equation Modelling (SEM) results provide further insights into the mechanisms underlying adoption.

The findings of SEM in Study 3 provide a comprehensive understanding of the factors influencing Open Banking adoption among Malaysian Islamic banking consumers, revealing a distinct hierarchy of predictors shaped by cognitive, affective, and social factors. Performance Expectancy emerged as the strongest determinant of adoption intention, indicating that consumers primarily evaluate Open Banking based on its practical benefits and usefulness. This aligns with findings in both Islamic and Western contexts, such as Chan et al. (2022) in Australia and Araluze and Plaza (2023) in Spain, where perceived utility and performance expectations strongly influenced adoption. Although Effort Expectancy did not directly influence usage intention, it significantly affected Performance Expectancy, suggesting that user-friendly systems enhance perceived value rather than independently motivating adoption. This likely reflects the relatively high familiarity of Malaysian Islamic banking consumers with digital banking platforms, which reduces the direct impact of usability concerns.

Perceived Behavioural Control, reflecting self-efficacy, also positively shaped Performance Expectancy. Consumers confident in their ability to use technology perceive Open Banking as more beneficial, reinforcing the importance of enhancing users' self-efficacy to boost adoption. Similarly, Subjective Norms influenced Performance Expectancy but did

not directly affect adoption intention, indicating that social pressures primarily shape perceptions of usefulness rather than directly driving behavioural choice. In contrast, in Western contexts, social influence often directly affects adoption intention, particularly in early-stage adoption or low-familiarity markets (Chan et al., 2022; Araluze & Plaza, 2023). The indirect role of social influence in Malaysia may reflect the voluntary nature of Open Banking adoption and the more autonomous decision-making of digitally literate Islamic banking consumers.

Trust was identified as the second most important driver of adoption, highlighting the centrality of ethical practices, transparency, and responsible handling of financial data in fostering consumer confidence. Financial confidence further strengthened trust and mitigated the negative effect of perceived risk, suggesting that consumers with higher self-assurance in their financial knowledge perceive Open Banking services as more secure and reliable. These findings are consistent with Islamic-context studies such as Mutambik (2023) in Saudi Arabia, where trust and emotional satisfaction were critical determinants of loyalty and adoption. In contrast, in some Western contexts, financial literacy can paradoxically reduce initial trust, reflecting a more sceptical stance among informed users (Chan et al., 2022). Attitudes toward Open Banking also positively influenced trust, indicating that favourable perceptions further enhance confidence and reduce scepticism.

Perceived Risk negatively affected adoption intention, but its impact was relatively low, consistent with prior studies (Oloveze et al., 2023; Rahardja et al., 2023; Chan et al., 2022). Its effect was mitigated by both financial confidence and trust, suggesting that Malaysian Islamic banking consumers approach Open Banking adoption cautiously yet

rationally, prioritising potential benefits over perceived threats. Comparing these findings with global studies highlights both universal patterns and context-specific differences.

Across contexts, cognitive evaluation particularly perceived ease of use is a consistently strong predictor of adoption. However, in Islamic banking contexts, affective factors such as trust and financial confidence play a stronger role, reflecting ethical and religious considerations inherent in financial behaviour. Social influence is more pronounced in Western settings, where peer recommendations and normative pressures can compensate for limited familiarity with digital banking. Perceived risk is also managed differently. In Islamic banking contexts, trust and financial confidence reduce risk perception, whereas in emerging or Western markets, risk may exert a stronger deterrent effect unless mitigated by regulatory assurances.

Sub-sample analysis also indicated that demographic factors had minimal influence on adoption. Differences in intention across gender, age, marital status, or income were largely non-significant, while education showed only a very small effect. This highlights that behavioural and attitudinal factors, rather than socio-demographic characteristics, are the primary drivers of adoption.

These findings contribute to our understanding of the factors influencing consumers' intention to adopt Open Banking in Islamic banking institutions in Malaysia. The analyses demonstrated that Attitude, Perceived Behavioural Control, Subjective Norms, Effort Expectancy, Financial Confidence, Performance Expectancy, Trust, and Risk and Financial Confidence each play a significant role in shaping consumers' intention to adopt Open Banking. The identification of distinct user segments offers actionable insights for financial

institutions, suggesting that tailored strategies targeting awareness, trust, and usability can enhance adoption across different consumer profiles.

7.3 Contribution of the Study

This research makes significant contributions to the literature on Open Banking adoption, particularly within the context of Malaysian Islamic banking, by integrating conceptual, empirical, and practical insights from three complementary studies. Collectively, the studies provide a comprehensive understanding of the factors shaping consumer intention to adopt Open Banking services, highlighting the interplay of cognitive, affective, and contextual dimensions.

7.3.1 Theoretical Contributions

The study advances theoretical understanding in multiple ways. First, it provides conceptual clarity on Open Banking in the Malaysian Islamic banking context in Study 1, framing it not merely as a regulatory compliance initiative but as a strategic, collaborative, and platform-based business model. This perspective extends prior research by highlighting Open Banking's dual role as both a driver of financial innovation and a mechanism for market expansion in emerging Islamic banking markets.

Second, the research identifies key determinants of adoption, including perceived value, trust, and perceived risk, and demonstrates their conditional and dynamic relationships. High perceived utility can mitigate concerns about trust or friction, while low perceived utility inhibits adoption regardless of trust levels. Based on Study 2 and 3, the findings contribute to the theoretical understanding of technology adoption by extending the applicability of the Unified Theory of Acceptance and Use of Technology (UTAUT) and Theory of Planned Behaviour (TPB) within the context of Open Banking in Islamic financial services.

Consistent with UTAUT, Performance Expectancy emerged as the strongest determinant of adoption intention, reinforcing the central role of perceived usefulness in technology adoption. However, the results refine the framework by showing that Effort Expectancy influences adoption indirectly through Performance Expectancy rather than exerting a direct effect. This suggests that in digitally mature environments such as Malaysia, ease of use enhances perceived value rather than independently motivating behavioural intention.

The findings also provide support for constructs derived from the Theory of Planned Behaviour (TPB). In particular, attitude toward Open Banking was found to positively influence trust, suggesting that consumers who hold favourable perceptions of Open Banking services are more likely to develop confidence in the technology and the institutions providing it. This highlights the role of attitudinal evaluation in shaping affective responses such as trust, which subsequently influence adoption intention. The result extends the application of the TPB framework by demonstrating that, in the context of Open Banking within Islamic banking, attitude may operate indirectly by strengthening trust rather than directly influencing behavioural intention.

In relation to TPB, the findings confirm the relevance of perceived behavioural control through the role of self-efficacy in shaping Performance Expectancy. Consumers who feel confident in their ability to use digital financial services are more likely to perceive Open Banking as beneficial. Furthermore, the indirect role of subjective norms suggests that social influence operates primarily through shaping perceptions of usefulness rather than directly determining behavioural intention. Taking everything into account, these findings extend both theoretical frameworks by demonstrating how cognitive, affective, and contextual factors interact in shaping Open Banking adoption in Islamic banking environments.

Third, the study highlights the critical role of APIs, organizational readiness, and institutional culture in enabling Open Banking particularly in Study 1. While technological infrastructure is necessary, successful adoption depends equally on innovation capacity, stakeholder engagement, and human factors, particularly in emerging markets where organizational innovation may be slower.

Finally, the research highlights the interplay between regulation, fintech development, and market dynamics. Adoption is shaped not only by regulatory frameworks ensuring fairness and security but also by FinTech providers operationalizing Open Banking and delivering consumer-oriented services. This provides a holistic view of adoption drivers in Islamic banking ecosystems, emphasizing the co-creation of value across regulatory, organizational, and market actors.

7.3.2 Methodological Contributions

Methodologically, the study employs a robust empirical framework to examine Open Banking adoption. A notable methodological contribution of this research is the application of the Gioia technique in Study 1 to capture and structure the qualitative insights into Open Banking adoption. By systematically coding and categorizing themes such as Open Banking concepts, API centrality, perceived value, trust, risk, FinTech development, and regulatory considerations, the study provides a rigorous approach to analyzing complex, context-specific phenomena. This application not only enhances conceptual clarity but also demonstrates how the Gioia methodology can be effectively integrated within mixed-methods research to inform empirical model development.

In particular, the qualitative findings generated through the Gioia technique guided the subsequent quantitative studies by identifying key constructs and relationships to be

tested empirically, ensuring that the measurement models in Studies 2 and 3 were grounded in actual consumer perceptions and industry realities. This integration of qualitative and quantitative methods strengthens the validity of the research and contributes to the literature on mixed methods approaches in FinTech adoption studies. It highlights a structured way to bridge exploratory thematic analysis with confirmatory statistical modelling, offering a replicable framework for future research examining technology acceptance in culturally and institutionally specific contexts.

Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) were employed to rigorously test the measurement and structural properties of the study's theoretical model, including Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust. The CFA results established convergent validity, demonstrating that each construct was appropriately measured by its indicators, with strong factor loadings, high internal consistency (Cronbach's alpha), and robust composite reliability. Discriminant validity was also confirmed, ensuring that each construct represented a distinct concept rather than overlapping with others.

The use of cluster analysis, correlation analysis, and stepwise regression further allows for segmentation of consumers, identification of key predictors, and quantification of relative influence of cognitive, affective, and risk factors. This multi-method approach provides a rigorous template for future research in similar cultural and institutional contexts.

Furthermore, SEM further extended these analyses by examining the structural relationships among constructs, providing empirical evidence of the hypothesized pathways influencing adoption intentions. Through SEM, the study identified both direct and indirect effects, such as Effort Expectancy influencing adoption via Performance Expectancy, and the

role of Financial Confidence in mitigating perceived risk. By combining CFA and SEM, the study not only validated the measurement model but also offered a robust explanation of the mechanisms through which cognitive, affective, and contextual factors shape consumer intention to adopt Open Banking.

This methodological rigor enhances the reliability of the findings and provides a replicable framework for future research on technology adoption in financial services, particularly within culturally specific and regulated contexts such as Islamic banking.

7.3.3 Empirical Contributions

Empirically, the study provides novel evidence on Malaysian Islamic banking consumers' behaviour and attitudes toward Open Banking. Three distinct user segments which are the Emerging Users, Potential Adopters, and Engaged Users were identified, reflecting variations in awareness, engagement, and digital readiness. The findings demonstrate that cognitive factors (e.g., perceived ease of use, reliability, and perceived value), affective factors (e.g., trust and perceived risk), and contextual factors (e.g., regulatory awareness, social influence, and demographic characteristics) collectively shape adoption intentions. Notably, behavioural and attitudinal factors were more influential than socio-demographic characteristics, emphasizing that perceptions, confidence, and perceived risk are central to adoption.

Other than that, this study makes an empirical contribution by providing new evidence on the factors influencing Open Banking adoption among Malaysian Islamic banking consumers. The findings demonstrate that cognitive factors (e.g., perceived ease of use, perceived value, reliability) and affective factors (e.g., trust, perceived risk) influence adoption in ways consistent with previous studies in Western and conventional banking contexts. However, the

study also reveals context-specific differences which is the social influence (subjective norms) affects adoption indirectly through performance expectancy rather than directly, highlighting the moderating role of ethical, religious, and regulatory considerations in an Islamic banking environment. These results contribute empirically by showing how adoption determinants operate uniquely in this context, offering insights that extend the understanding of Open Banking adoption beyond conventional banking settings.

7.3.4 Practical Contributions

From a practical perspective, the study informs Islamic banks, FinTech providers, and policymakers on designing consumer-centric, Shariah-compliant Open Banking services. Emphasizing performance benefits, trust-building mechanisms, and risk mitigation strategies can enhance adoption, particularly among less familiar or moderately engaged users. Segmentation insights support targeted marketing, onboarding, and consumer education programs, while highlighting the importance of institutional preparedness and organizational culture in fostering adoption.

7.3.5 Policy and Societal Contributions

The findings also provide actionable guidance for regulatory frameworks and consumer education initiatives. By demonstrating how financial literacy, self-efficacy, and trust influence adoption, the study emphasizes the need for policies that strengthen consumer confidence, promote secure and culturally relevant digital financial services, and facilitate responsible innovation within Shariah-compliant financial ecosystems.

In sum, this research integrates conceptual, methodological, and empirical insights to offer a holistic, empirically validated model of Open Banking adoption in the Malaysian Islamic banking context. It extends theoretical models by incorporating cognitive, affective, and

contextual dimensions, provides practical guidance for practitioners, and informs policy frameworks aimed at fostering inclusive, secure, and innovation-driven financial ecosystems.

7.4 Limitation and Future Research Direction

While this research provides valuable insights into Open Banking adoption in Malaysian Islamic banking, several limitations should be acknowledged, which also suggest avenues for future research.

First, this study relied primarily on qualitative or self-reported data. Study 1 drew on expert interviews, offering rich insights into strategic, operational, and regulatory perspectives, but these findings may not fully capture the perspectives of broader retail consumers. Studies 2 and 3 relied on survey data, which, while rigorously analyzed, may be subject to social desirability bias, recall bias, or subjective interpretation of constructs such as trust, perceived risk, and financial confidence. Additionally, treating Likert-scale responses as interval-level data for Pearson correlation and regression assumes equal spacing between points, which may not fully reflect respondents' perceptions. Future research may incorporate a behavioural or transactional data to validate self-reported measures and provide a more objective assessment of adoption behaviour.

Second, the sample representation was limited. Across the studies, certain demographic groups were overrepresented which are females, younger adults, married individuals, those with higher educational attainment, and middle-income earners while older adults, widowed participants, lower-educated individuals, and extreme income brackets were underrepresented. This limits the generalizability of the findings to the broader Malaysian population, particularly less digitally literate consumers or those with limited exposure to

Islamic banking services. Future research should aim for more stratified and representative samples to capture adoption behaviour across diverse socio-demographic groups.

Third, the studies were largely cross-sectional, providing only a snapshot of perceptions, familiarity, usage intentions, and attitudes at a single point in time. Consequently, the ability to draw causal inferences is limited, and adoption behaviour may evolve as Open Banking services, regulatory environments, and FinTech ecosystems change. Longitudinal designs could provide deeper insights into the development of intentions, actual usage behaviour, and the impact of interventions such as financial literacy programs, trust-building initiatives, or marketing campaigns.

Fourth, this study focused on intention to adopt Open Banking rather than actual usage behaviour. Thus, the adoption in practice may be influenced by external factors such as evolving regulations, technological infrastructure, the range of financial services offered, or competitive dynamics. Future studies could examine actual usage data and longitudinal adoption patterns to complement self-reported intentions.

Fifth, methodological constraints warrant attention. Although Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) provide rigorous and statistically robust tools to test measurement models and hypothesized relationships among constructs, the results remain correlational rather than causal. This means that while CFA confirms that survey items reliably measure the intended constructs such as attitude, trust, perceived risk, and SEM quantifies the strength and direction of relationships between these constructs such as how trust influences the usage intention, it does not prove that one variable causes change in another.

This correlational nature arises because the data are cross-sectional and observational. It means all variables are measured at a single point in time without experimental manipulation or temporal ordering. For example, while SEM may show a strong positive relationship between performance expectancy and usage intention, however, it cannot definitively determine whether high performance expectancy leads to higher usage intention, or if individuals with higher usage intention perceive greater performance benefits.

To establish causality, longitudinal designs, experimental interventions, or randomized controlled studies are required, where changes in independent variables can be observed to produce systematic changes in dependent variables over time. Thus, while CFA and SEM provide valuable evidence of theoretical relationships and model fit, interpretations of the results must remain careful as they indicate associations and potential predictive patterns, not definitive cause-and-effect relationships.

Furthermore, the cluster analysis outcomes are sensitive to the choice of variables and segmentation methods, meaning alternative approaches could reveal different patterns. Some statistical assumptions, such as homogeneity of variances, were not fully met in subgroup analyses, which may affect the precision of comparisons. Additionally, the structural models did not capture all potential external influences, such as emerging digital financial technologies, broader cultural norms, or varying levels of financial literacy.

Sixth, while the studies offer a detailed understanding of Malaysian Islamic banking consumers, the contextual specificity limits direct applicability to other settings. Differences between Islamic and conventional banking including regulatory frameworks, ethical considerations, risk perceptions, and product offerings may affect adoption drivers.

Moreover, Islamic banking systems in other regions, such as the Middle East, North Africa, or Southeast Asia, operate under distinct regulatory, cultural, and technological conditions. Comparative studies across these banking types and countries could illuminate how adoption is shaped by contextual and cultural factors, and whether models developed in Malaysia are generalizable or require adaptation.

Finally, several themes, such as trust, perceived risk, and API integration, were explored conceptually rather than examined in technical or operational detail. Future research could investigate practical and technical challenges, including system integration, platform interoperability, cybersecurity measures, and Shariah-compliance verification, bridging the gap between adoption models and implementation strategies.

By addressing these limitations, future studies can enhance the generalizability of findings, capture longitudinal trends, integrate multiple perspectives, and incorporate behavioural data. Expanding research to conventional banks and Islamic banking systems in other regions will provide comparative insights, enrich theoretical models, and inform regionally tailored strategies for promoting secure, inclusive, and culturally relevant digital financial services.

7.5 Conclusion

This chapter has provided a comprehensive summary of the study, integrating the key findings, theoretical and practical contributions, limitations, and directions for future research. Collectively, the three studies offer a holistic understanding of the factors influencing consumer acceptance of Open Banking in Malaysian Islamic banking institutions.

The findings demonstrate that adoption is shaped by an interplay of cognitive, affective, and contextual factors. Cognitive factors including perceived ease of use, performance expectancy, reliability, and perceived value reflect the rational evaluation consumers undertake when considering Open Banking services. Affective factors, particularly trust and perceived risk, highlight the importance of confidence, psychological comfort, and perceived security in shaping adoption. Contextual factors, such as regulatory awareness, social influence, demographic characteristics, and institutional readiness, further inform user decisions, emphasizing the role of environmental and situational considerations in technology adoption.

The studies also reveal that adoption is influenced less by socio-demographic characteristics and more by behavioural, attitudinal, and perceptual factors. Segmentation analyses identified three distinct consumer groups Emerging Users, Potential Adopters, and Engaged Users each reflecting varying levels of familiarity, digital readiness, and engagement with Open Banking. These findings suggest that targeted strategies addressing awareness, trust, usability, and perceived value are likely to be more effective than demographic-based approaches in promoting adoption.

From a theoretical perspective, this research extends existing technology acceptance models such as UTAUT and TPB by integrating organizational, technological, and socio-technical factors, offering a more comprehensive understanding of Open Banking adoption in an Islamic banking context. The application of the Gioia methodology in Study 1 further illustrates the value of combining qualitative and quantitative approaches to explore complex, context-specific phenomena, bridging exploratory insights with empirical validation.

Methodologically, the use of CFA, SEM, and cluster analyses ensured robust measurement and structural modelling, confirming the reliability and validity of key constructs such as Attitude, Subjective Norms, Perceived Behavioural Control, Performance Expectancy, Effort Expectancy, Risk, Financial Confidence, and Trust. While these analyses reveal significant associations and predictive patterns, the cross-sectional and correlational nature of the data limits causal inferences, underscoring the importance of longitudinal or experimental designs in future research.

Practically, the findings provide actionable guidance for Islamic banks, FinTech providers, and policymakers. Emphasizing performance benefits, usability, trust-building mechanisms, and risk mitigation strategies can enhance adoption, particularly among less aware or moderately engaged users. The insights regarding organizational readiness, API integration, and regulatory alignment further underscore the need for holistic, institutionally supported strategies that foster secure, consumer-centric, and Shariah-compliant Open Banking ecosystems.

Finally, the study acknowledges contextual limitations. The focus on Malaysian Islamic banking, with its unique dual banking system and regulatory environment, may not directly generalize to conventional banking or Islamic banking systems in other regions such as the Middle East, North Africa, or Southeast Asia. Future research should explore cross-country and cross-system comparisons to examine how regulatory frameworks, cultural norms, technological infrastructure, and consumer perceptions influence adoption, providing comparative insights that can enhance the generalizability and applicability of findings.

In conclusion, this chapter highlights that understanding consumer adoption of Open Banking requires an integrated perspective that considers rational evaluation, emotional

responses, and contextual influences. By combining conceptual, empirical, and methodological contributions, the study advances knowledge in Open Banking within Islamic banking, informs practice, and lays a foundation for future research to further explore culturally and institutionally specific digital financial ecosystems.

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Appendix A: Summary on the Preliminary Interviews Study 1

Aspect	Opinion
Impacts of Open Banking	Positive. Provides opportunities for innovation and new products and services. Transformational for the industry. Improvement needed in data quality and standards.
Risk	Financial and credit risk, security and privacy of consumer data, fraud, misuse of data. Open Banking reduces risk by ensuring authorized data sharing and secure systems. Lack of adoption or innovation, cybersecurity risks, cost of failure, cost of losing customers.
Consumers' Acceptance	Adoption is low but growing. Utility and convenience are key factors. Risk and reward and friction in the journey can affect adoption. Innovation needed for better solutions linked to real consumer problems. Awareness and trust vary between mass consumers and retailers.
Trust	Trust and utility are not linear relationships. Trust, friction, and utility all affect adoption. Some people may never be comfortable sharing their bank account details. More work can be done to improve trust and security. Partnerships with small businesses can drive technological innovation.

*Based on interview conducted with industry participants; Group Head, Model Validation, DBS Bank, CEO of Inbest.ai, Marketing Director, FinTech Scotland and Business Development Team Lead (SEA), PolyDigi Tech Ltd.

Table 4.1: Data Structure Study 1

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • We call it a joint venture. (P1) • We call it a customer onboarding. (P1) • There are many different channel, the bank would like to have more customers. (P1) • It's more on the dynamic business model and platforms for finance and banking. (P4) • The bank wants to collaborate with other, like a FinTech company as well. (P1) • FinTech provide a platform right for the bank. (P1) • The bank also needs a platform to expand the business. (P1) • It is more on opening opportunities to a disruptive spectrum in finance. (P4) 	<ul style="list-style-type: none"> ○ Collaboration with fintech ○ Providing platform. ○ FinTech as a source of new customer for bank. ○ Business platform. ○ Business channel ○ Open Banking as a trend. ○ A collaboration with bank and FinTech companies. ○ Business opportunities. 	Open Banking Concept

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • You can license and payment platform and banking your product through API. (P2) • Open Banking minus the APIs in the same way a car run on wheels. So Open Banking run on APIs. (P2) • In essence, Open Banking is APIs. (P3) • With open banking, you've got plenty of the organizations that can actually tell a bank (about the person record). (P3) • Anybody could provide API and these are what we call a super app. They wanna do all this kind of business in just one app. • And (Monzo) they are becoming one of the biggest bank in the UK due to the business models that adopting Open Banking systems. (P4) • We treat this to say just a strategy to address the market. Well, FinTech is a whole. If I could narrow down that FinTech is a whole picture of it and Open Banking is part of the business, the model that banking need to open. (P4) 	<ul style="list-style-type: none"> ○ Enabler of Open Banking ○ Data Exchange ○ System Integration 	<p>Centrality of Application Programming Interfaces (API) to Open Banking</p>
<ul style="list-style-type: none"> • You can access your banking data whenever whatever from whatever product you want, not just the raw data, but services that can be built with your data. (P2) • You can pay directly with your bank, which is more secure, quicker and cheaper. (P2) • And you can build new products and services for your customers using banking data. (P2) • For example, say business owner. I can aggregate my banking data on 	<ul style="list-style-type: none"> ○ Access of banking data ○ Direct payment ○ More secure and cheaper ○ Utility in using Open Banking services ○ Aggregate banking data ○ Friction in journey ○ Seamless banking experience ○ Better understanding on money management ○ Better solution for real problem 	<p>Perceived Value in Open Banking</p>

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>my accountancy software package. (P2)</p> <ul style="list-style-type: none"> • it's convincing clients to make the change. (P2) • I think people will use Open Banking as long as it gives them utility. (P2) • People don't want to sign up to things and people don't want to share the data just for the sake of doing it. (P2) • Would you share your banking data to run your business and your accountants? Yes, absolutely, because that saves me lots of time. So I will share the data. Any data they need. (P2) • You need to list the risk and reward, utilities is the reward and the risk is how insured people are using the data. (P2) • The friction that you have in the journey. The things you need to work with the perceived risk of sharing the data and the convenience of sharing that data. • It's not the linear, it's not the flat relationship is not trust or not trust, distrust and utility. (P2) • We've seen some solutions out there, so it's mostly around and making things easier and faster. (P3) • Everything could be done with just open banking, so that can accelerate things. (P3) • We can also bring better quality data and if you couple that with whether it's artificial intelligence and machine learning, you can see how you could maybe get better understanding around people's 	<ul style="list-style-type: none"> ○ Less dependent on cash 	

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>financial situation to guide them through better money management. (P3)</p> <ul style="list-style-type: none"> • So, if I know your spending habits for the past three years, I can definitely look at ways to improve the way you do things. Maybe help you save a bit more will help you towards achieving your goals, and that that's the basics of open banking. (P3) • I think instead of speaking about the technology, we need to speak about the problem we're trying to solve. (P3) • Actually, if you were to say, do you want me to do a tax return for you in two seconds? And by the way, for me to do that, I need access to your bank account. (P3) • What we need is more innovative solutions that are going to make it. (P3) • A better solutions because using Open Banking is very easy, so it's not about the complexity because there's no complexity. (P3) • I think more solutions, better solutions linked to real consumer problems. (P3) • Where Open Banking helps to do something, people need to do and want to do. And I think if we see more developments like that, Open Banking is going to become mainstream. (P3) • What they really want is the seamless experience of using banking platforms where they can, let's say for example they can manage the finance all on one platform. (P4) 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • The benefits of it is the seamless experience and the time. (P4) • People are registering without having the ability to go to the banks physical banks, you just sign up from the phones and then you can receive your own card delivered to your home. (P4) • It's still depend on how much the security level that you can provide, and how much seamless experience that you can do. (P4) • It is actually providing opportunities for a lot of data providers, cybersecurity providers, payment providers to actually fasten the payments, seamless experience, making people less dependent on cash. (P4) 		
<ul style="list-style-type: none"> • All these information (personal information) will go into a risk assessment. We call it an application scorecard. (P1) • When you apply a bank account with the bank, the bank will try to get information from different sources. (P1) • Expedia should have my information; you know my consumption information on the website. (P1) • They (Expedia) will send the list to the bank and then the bank also have internal system, will assess your risk. (P1) • The final decision is still made by bank but Expedia should provide the bank with that recommendation. (P1) • I think that the bank's responsibility, like we, we own the customer data. (P1) 	<ul style="list-style-type: none"> ○ Collection of consumers data for risk assessment, use of data for loan, data from different sources, and past record. ○ Consumer database from FinTech companies. ○ Bank making decisions using data provided by FinTech company. ○ Data security. ○ Bank should take a proper step in ensuring the safety of the consumer data collected. ○ Business ethics in handling the personal data of the consumers. ○ Issue of fraud regarding the use of personal data collected by the FinTech. ○ Risk of fraud. 	Perceived Risk in Open Banking

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • Maybe the FinTech company also have a responsibility like because both bank and FinTech company they have a customer data. Like the general principle is my view, we should protect customer data. It's about business ethics. (P1) • You can use the customer data for profit. You can also use that data to manage risk. (P1) • It allows people to give access to their bank data to third parties. (P3) • A lot of peoples are now aware about the data rights in financials. (P4) • Is more secure to our opinion, but not to the customer opinion (data security). (P4) • This kind of FinTech company they all always use the customer data for their business objective. So they found maybe there are some fraud over something not positive by using the customer data. (P1) • There are some fake customers, like a scam. They try to pretend as a good customer and provide you all the fake information. (P1) • If you provide me with a service that will be helpful, then maybe you know inclined to share my data. (P3) • A terminology like a big data, machine learning so they try to build a model to identify or to detect this kind of a situation because we have many different customer data within a bank. (P1) • From the Bank perspective the main risk is for me it's the credit risk of default risk because we 	<ul style="list-style-type: none"> ○ Building the model to alleviate the risk of fraud. 	

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>want to earn your money, your interest, but I hope you can repay my money right on time. (P1)</p> <ul style="list-style-type: none"> • It's risky, but there are the complementary like cybersecurity in Open Banking. Let's see how are we secure than other security provider. (P4) • There are phishing scammer, a lot of things because of the API. But in Malaysia, since we are conservative, the risk in the market is slower and but the backward effect of it is we are, the innovation is slower than others. (P4) • The cost itself because they need to give up some cost of failure. (P4) • Whenever, whenever a business acquire, a start-up technology, the cost is not just the risk of failure but the cost they paid through the customers, they paid to the to the start-up like to try and test and if the technology is doesn't work they need to mitigate the new solutions, they need to mitigate to another firms that could provide them a new level of security. (P4) • In Malaysia, as I said, the market is saturated and concentrated. I haven't heard any a lot of happening within the cyber security measure. What is happening is a lot of risk coming from a whole wide, lot of business banking. (P4) 		
<ul style="list-style-type: none"> • Because you are the Expedia customer in the past, you trust the website. So maybe you will say yes, and now I need like a 2000 pounds. (P1) 	<ul style="list-style-type: none"> ○ Concern over the use of technology. ○ Preference on using traditional banking over technology due to age and generational gap. 	Trust in Open Banking

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • I prefer face to face communication, but for the young generation maybe they are more acceptable. (P1) • I think it got Chinese FinTech company that failed in the US exchange, but anyway it's also about the personal data protection. (P1) • Younger generation if they are used to use the FinTech company, maybe they will go for that option, but I believe they are still certain amount of customers still prefer you know face to face communication. So the Bank I think still survive. (P1) • If I want to borrow money from bank, I will not go to FinTech. I go to bank directly because I'm old. (P1) • They need to share the banking data with something very personal. So you need to provide them value added. (P3) • You would need to give them a reason for them to share this data, what is in for the consumer. Why would they share your banking data, which is very precious? (P3) • I see the main risk is misuse of data that you know some Open Banking providers may be a rough player and they won't deal with customer data with the care it requires. (P2) • And that will create a backlash from regulators and customers will distrust Open Banking because one guy has it misuse client data because you have a lot of information there you have anything from you know where 	<ul style="list-style-type: none"> ○ Ease of use concern. ○ Concern over the issue of personal data misuse based on the news. ○ Different generation shows different level of trust towards the technology. 	

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>they spend their money where they are. Uhm, you know if that data gets to the wrong hands. That can be a problem. And you know that can create a backlash if this happens. (P2)</p> <ul style="list-style-type: none"> • It's not the banks who have to deal with that risk is the regulator and the companies that use Open Banking data. Banks are the ones that provided data. You have the provider and the receiver. So, the ones that have to deal with that are the receiver. (P2) • There might be a lending company I do not trust at all, but I need a loan. I really need a loan and the only way for applying for that loan is sharing my banking data so I don't trust them, but they do share my banking data because I need the loan that gives me utility. (P2) • There are more variables involved there is trust there is friction of the use and there is the utility you need; you get using that service. (P2) • You know if you have a lot of utility. Maybe you don't need too much trust and you don't need, you know on the friction can be high, but still I will find very hard because they have lots of utility in the service. (P2) • You know you can have as much trust as you want, and the journey can have as little friction as you want. (P2) • You need to balance. If you have little utility and a lot of mistrust, you will never use it. (P2) 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • Credit risk is another thing to the risk credit for large banks, because in in the UK right now. The bank will use Data Bureau to understand whether someone is worthy of being lent money. (P3) • Open Banking removed the risk by making sure that you can only share data with authorized companies and that it's done in a secured way without giving your credentials. So, without sharing your personal identifier identifiers. So that's safe. (P3) • In order to provide API's, the banks are had too, probably upgrading their systems and creating more security. And for customer data, so I think it's been a force for good open banking. (P3) • Like everything, there is always risks and obviously any data can be breached, but that's not to do with open banking. That has to do with data more generally. (P3) • Any bank can be hacked despite the security. Now it's getting harder and harder because obviously the security is getting better and better. But you can never be 100%, but that's not something that's being increased by Open Banking in the way. (P3) • The risk is the lack of adoption of Open Banking or in innovation and the lack of and support Open Banking is going to be in the future. (P3) • And obviously some people will never be happy to share their bank account details and you know 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>that's. That you, you won't be able to change their mind, I think. (P3)</p> <ul style="list-style-type: none"> • When it comes to, you know that, that element of trusting the technology from a security perspective, I think maybe more work can be done with that aspect to make sure that people understand that it's completely safe. Or as safe as it can be. (P3) • You know the reason for existing, the bank is their trust, trusted company. Like where you can put your money and take it whenever you need it so that. That's their whole job is trust. (P3) • Both the provider of the data and the person holding the data and basically dealing with the data need to do it in a safe way. (P3) • What you care is that you either have the green bar. And you don't need to understand the technicalities behind that. (P3) • I heard in Malaysia, there are banks who sells customer data to salesman, and it is not ethical knowing that. So if a lot of people are getting to know about it, they will be disappointed. Disadvantages would be on the newcomers, technology providers and also the customers and not so much to banking. (P4) • API will be a little bit risky at this moment but you have to evolve. You have to evolve. It has to be adopted. Otherwise we will be lagging behind. (P4) • As a player, very less actually I heard about the cybersecurity breach in Malaysia through Open 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>Banking at this moment which providing me an insight that conservative play by Bank Negara is actually are stable compared to market in Europe. (P4)</p> <ul style="list-style-type: none"> • The first one is a mass consumer, they are obviously know nothing about what is happening right now to open data sharing. They don't really read about the term and agreements, conditions that they just accept and agree. (P4) 		
<ul style="list-style-type: none"> • Innovation. First of all, you can build new payment gateways so you know you can. You can create your turnover, you can, increase your conversions, reduce your costs and then you can build new products and services using banking data for you. Have a lot of new PFM and sort of new lending companies or sort of new accountancy software packages that uses exclusively banking data, Open Banking data. (P2) • To allow new companies to launch and create new services and products to help customers outside of the normal banks. (P3) • That are going to be able a better solution for customers and we quickly going to move away from Open Banking to open finance, because obviously a bank account is only one small part of the money you had. You will have a pension. You might have savings. Might have a credit card. If you can open up all those things as well, then, the guidance you can get in the back of it could be fantastic. (P3) 	<ul style="list-style-type: none"> ○ Open Banking leads the innovation. ○ Roles of solution provider to build a more innovative product. ○ Open Banking fosters the growth of FinTech. ○ Open Banking needs to achieve the level of standardization across the world. ○ Open Banking as an effort to move towards Open Finance 	Impact on development of FinTech

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • There's a company called FData and they that's what they're trying to do. So they were involved with the creation of Open Banking in the UK, and now they're trying to work with all the regulators around the world to make sure that standards can be applied. (P3) • I think we need to see more new products and services developing open banking. And at the start we had a lot of what you would call personal finance management platforms that use Open Banking and they provided guidance and people like that. (P3) • It's massive, it's massive (the impact of Open Banking). (P3) • I mean, a lot of different sites are using Open Banking aside of their services and whether it's sustainably while using it to help people give to charities whether it's Direct ID using it to do credit checks, whether it's money dashboard we need for money management, so it's really, really created a lot of new innovation. (P3) • The impact on the financial services as a whole is also interesting because as you can imagine, banks could have been quite reluctant at the start by saying, well, we don't want to give away our data, but I think the regulator was very quick to say, well, it's not your data. It is the consumers data, and they should be able to share it with people who are regulated. (P3) 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • There's still improvement to be made in terms of the data that's being sent, the quality of the data and the standards. There's still some work to be done, but already it's it's been good. So you know the for the industry, it's been transformational and like I said it's just the start. I think we got to quickly move to open finance. (P3) • I think that the more important thing is to make sure that we can now move to open finance very quickly. So, what you do on Open Banking is great, now we need to do open finance. And that's where we need the regulator to really help. (P3) • There's already the pension dashboard project being worked on for pensions, and so we'll get there at some point, but no, it doesn't create more risk to create more innovations which means more opportunities for customers to manage their money better. (P3) • You've got new solutions being developed at the minute whereby by using Open Banking you can have one range for all the banks, so that could help people who still want to go in a branch to access their bank from maybe a supermarket. All the services by connecting the bank account and they could do it. (P3) • It is not actually benefits for them because banking institution is a legacy business and they are actually distracted by this innovative business model from Open Banking. (P4) 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • Adoption rate in the UK, it is so fast that we did never expect to be that great. (P4) • To be honest, I couldn't differ between Open Banking and FinTech because both of them is like a moving along together parallelly. (P4) • It is more on how the world is actually open to much more innovative thinker. (P4) • If we could provide a strong experience through WhatsApp to a lot of people, we will be the landscape shaper. (P4) • We've seen a lot of merger and acquisition happenings in UK where start-ups in Open Banking getting acquired by larger banks, getting acquired by technology solution providers. It is an exciting moments right now to see a lot of Open Banking start-ups actually they are getting to the point of being mature in the market. (P4) • I think from my point of view, it always in this in in this spectrum of Open Banking it is the solution provider. (P4) • If we rely on the regulators, right now regulators are just to regulate, they give us the freedom to innovate the open banking. So, to see the successful of Open Banking space to mature. It is the solution providers. (P4) • You know it's just the beginning of open banking. They will and that's just the tip of the iceberg. There's gonna be so many other solutions that are going to appear in the next few years. (P3) 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • I think if you ask me this question, my answer is regulator (plays important role in the development of open banking). (P1) • Regulator should ensure the fairness. (P1) • They (customers) are into the rules, making sure you FCA compliance that you take care of their data, that you are professional, that you use the data for what you said you are using it. You know those type of things. (P2) • The companies who acquired the data as per regulation. (P2) • The bank responsible to only share the data with companies that are regulated. But if I'm regulated with FCA then I acquired this data, I'm also responsible of reading the data in the manner I agree with regulator that I will manage this data. (P2) • Well, they should be also mature enough, only sharing the data with companies that are regulated. (P2) • The regulator has to regulate way more entities and has to regulate the way more complex ecosystem with many more connections. (P2) • Every regulation effects innovation, regulation stops innovation, but this is necessary to ensure trust in the system. It is embedded part in the system so you cannot take out regulation. It is part of ecosystem. It is part in the innovation. (P2) • UK was first and was pushed by the FinTech turbo, the regulator, the FCA to create more competition in the market. (P3) 	<ul style="list-style-type: none"> ○ Regulatory Expectations ○ The most important role in development of Open Banking is the regulator. ○ Regulators need to ensure fairness in the ecosystem. ○ Compliance Requirement. ○ Regulatory Frameworks ○ Legal Protections 	<p>Regulatory and Compliance Considerations</p>

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<ul style="list-style-type: none"> • We moved from that being the responsibility and a risk with the customer to being with the bank, because now it's compulsory for the bank to provide good quality APIs. (P3) • To third party, obviously if they are authorized by the FCA, they could provide products and services to customers. (P3) • It is on the Bank's side to protect themselves against cyber threats against lots of data. (P3) • If it's not regulated, I don't understand how they could do open banking. Because you need an authorized third party to do to be able to do local banking. Because the bank wouldn't be able to connect with the customers data to someone if they're not regulated, and so it needs to be done with the regulator. (P3) • If solutions exist outside of regulation, then they're probably a bit like what I was speaking about before Open Banking you still had solutions. Using Bank data, but those would not be regarded as being open banking, it's called scrapping where you just take data from someone bank account with their credentials, which is not safe at all. (P3) • It needs to be led by the regulator, or it can be also led by the FinTech companies themselves, treasuring and lobbying the regulator in government. (P3) • Because obviously you wouldn't want to do it without the regulator 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>because that that would have many risks. (P3)</p> <ul style="list-style-type: none"> • And so Open Banking is a good example where the regulator has been proactive because it's an initiative that's been really driven by the regulator. (P3) • If you speak digital disruption more widely, there are some instances where the regulator might be behind. Or maybe a bit ahead, it will depend on the technology. (P3) • The regulator has a very, very important role to play when it comes to disruption. (P3) • They need to be embracing it, regulating it, and making sure it's done in a way that can facilitate innovation. (P3) • In the UK, we're very lucky because we've got the FCA with the financial sandbox where people can go and test their ideas and they can get guidance from the innovation team at the FCA. (P3) • That's not the case everywhere. In Singapore as well. The regulators is very proactive with MAS. In the US, some states are very progressive and like in Florida, some maybe behind so you know. But you cannot do it properly without a regulator. (P3) • I think if regulation could evolve, and I think the standards will evolve. I think there's been some changes as to how often do you have to authenticate, so it's going to evolve safely. (P3) • It is obvious here the regulators to place the role and right now. We as a solution provider, what we're 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>trying to say to people, we care about your data, right. So we have to do things rightly and there's a lot of people like us who wanna do things rightly and speaking to that it is interpreted as us as a business, not consumer. (P4)</p> <ul style="list-style-type: none"> • If we followed the regulatory and requirements it is obviously a fault done by the banks. (P4) • It's depend on how the regulators want to regulate the market. Because it is a centralized market. It is different than. For example, decentralized market in crypto where the data right is not yet something people raise about because the transparency is like, but in speaking in, in this case banking should fall into the false because of selling this data. (P4) • They buy the high net worth individual information from banking, which is surprising me and this is not right so. So the market will demand the strong architecture of data storage and banks have to follow. So these are the kind of inputs that we have to give to for example, sandbox Bank Negara where they need to know what is happening actually behind the scenes that they are actually not informed. (P4) • Adoption of Open Banking, for me as I'm view this from the point of view of how the market is. In the UK it is open market, so anybody could come, anybody, any nationals, any innovators who have the innovative ideas who want to improve banking systems and also 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>banking experience, you are welcome to be in UK. (P4)</p> <ul style="list-style-type: none"> • But in Malaysia we are prioritising the bumiputra, we are prioritising locals, Malaysian nationals to be the innovators. (P4) • Very less players coming from outside because of the close policy of our economy. So the adoption rate will be slower and the input from players to Bank Negara also will be slowed and different to UK where PSD2 evolving really fast but e-KYC in Malaysia still waiting the input from the players and they are playing they they're very conservative approach. (P4) • The market (API providers) in Malaysia is so concentrated where only the big players who have a lot of conglomerates, or who have a lot of business subsidiaries under them will success. (P4) • There are players who have a great API infrastructure for banking but it is not adoptable because of the people inside the organization is not ready to adopt it because they are new. (P4) • The innovation in Malaysia is slow because of the close innovation close policy and it cannot evolve. (P4) • Maybe new businesses that people don't really know, and that's why it's important that they are regulated and that the Open Banking can only be done with regulated companies. (P3) • The new technology usually happens within small businesses, not large business, so in securing 		

First-Order Concepts (Raw Data)	Second-Order Themes (Interpreted Themes)	Aggregate Dimensions (Theoretical Abstraction)
<p>the awareness we have to look at what kind of businesses, who really does the innovations, who really changing the market landscape. (P4)</p> <ul style="list-style-type: none"> • If we still depending on the legacy business. There will not change since they are comfortable. I used to wonder why we are so late at digital banking. This is because of they are so comfortable. But if we go to the United States or any other market in Westerns, they have a very lucrative policy. They are very open minded and yeah, so they give the chances to newcomers to the market to evolve. (P4) • It is actually hard unless you can partner with the larger institution and also small, medium enterprise to adopt your technology until they feel so comfortable to use the current technologies. (P4) • In Malaysia we still relying on the terms of digital banking and API provider and not yet any kind of Open Banking terms here. (P4) • We have to enclose our all of information about our development, our architecture and how are we actually securing. So this kind of exposure is actually part of requirement to be more secure. I think regulators have to be aware and keep on themselves knows about what is happening. (P4) 		

Appendix B: Survey Questionnaire Study 2

Consumers' Acceptance of Open Banking

Start of Block: Informed Consent

Q1

Welcome to the research study!

Dear Respondents,

We are interested in understanding your use of Open Banking and your opinion on open banking. For this study, you will be presented with information relevant to Open Banking. Then, you will be asked to answer some questions about it.

The term Open Banking in this questionnaire refers to the sharing of personal financial information with the third-party providers (e.g. Maybank's Treats Card app in Maybank2u platform and Hong Leong Bank, Maybank, Public Bank and CIMB partnered with WeChat Pay.) The information obtained from this questionnaire will be used in helping consumer in the use of Open Banking in future.

All of the information and respondents' identity will be kept STRICTLY CONFIDENTIAL and will be used for ACADEMIC RESEARCH PURPOSES only. Thank you for your kind participation and cooperation towards this study. The study should take you around 10 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study. The Principal Investigator of this study can be contacted at Aini Nur Hajjar Binti Khairol Nizam: s2116663@ed.ac.uk.

By clicking the button below, you acknowledge:

Your participation in the study is voluntary. You are at least 18 years of age. You are aware that you may choose to terminate your participation at any time for any reason.

	Yes	No
I consent, begin the study	<input type="radio"/>	<input type="radio"/>
I do not consent, I do not wish to participate	<input type="radio"/>	<input type="radio"/>

End of Block: Informed Consent

Start of Block: Section A

Q1 Gender

- Male
- Female

Q2 Age

- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- More than 55

Q3 Marital Status

- Married
- Widowed
- Divorced
- Never married

Q4 Level of Education

- Less than high school
- High school graduate
- Bachelor's Degree
- Master's Degree
- Professional Certificate
- Doctorate
- Post-doctorate

Q5 Monthly Income

- Less than RM2,000
- RM2,000 - RM3,999
- RM4,000 - RM5,999
- RM6,000 - RM7,999
- More than RM8,000

End of Block: Section A

Start of Block: Section B

Q1 These questions are about the attitude toward the data sharing aspect in open banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that using Open Banking is a good thing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that using Open Banking will give me benefits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that using Open Banking will allow me to access better products and services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 These questions are about other people attitude towards the data sharing aspect in open banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Those people who are important to me use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that those people who are important to me would want me to use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People whose opinions I value would prefer me to use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 These questions are about the perception of the ease or difficulty in sharing data by using open banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would have much more control over using my personal financial data by using Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given the resources, opportunities and knowledge it takes to use Open Banking, it would be easier for me to choose to share my personal financial data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be much more able to share my personal financial data because of the resources, opportunities and knowledge it takes to use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 These questions are about the perception on the ability of using Open Banking by sharing data to attain gains in term of financial aspects.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I expect to find Open Banking useful in my financial management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Open Banking would enable me to accomplish financial tasks more effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Open Banking would increase my efficiency in financial management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I were to use Open Banking, then I would increase the chance of getting more competitive banking offers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Q5 These questions are about the perception on the effort needed to use of Open Banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I expect that my interaction with Open Banking would be clear and understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that it would be easy for me to become skillful at using Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that I would find Open Banking easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that learning to use Open Banking would be easy for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Section B

Start of Block: Section C

Q1 These questions are about the perception on risk of sharing data in Open Banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that services obtained by sharing personal information will lead to poorer performance in general.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that services obtained by sharing personal information will not function at some level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe Open Banking might not perform well and create problems with my accounts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that sharing financial information will lead to potential fraud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that sharing financial Information will lead to financial loss for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I believe the chance of losing money is high when I share personal financial information.

I believe that the risk of misusing personal information is high when sharing personal financial information.

I believe losing control over personal information is high when sharing personal information.

I believe my privacy is at greater risk when sharing personal information because my personal information would be used without my knowledge.

End of Block: Section C

Start of Block: Section D

Q1 These questions are about the perception on financial confidence.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I always know how much money I get in and how much I need to pay the bills each week/month.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at budgeting and managing my money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can sort out any money problems myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 These questions are about the perception on the awareness and understanding about the financial concepts and procedures.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Knowledge in personal finance helps you to avoid being conned in an investment scam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You are spending more if the amount charged to your credit card is more than your salary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Car insurance premium is determined based on the age of the car owner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a guarantor for a friend's loan, you are entitled to receive part of the loan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Section D

Start of Block: Section E

Q1 These questions are about the trust aspect in Open Banking environment with the presence of the third-party provider.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I trust banks with my personal financial data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust third parties with my personal financial data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe banks will share my personal financial data with third parties securely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Section E

Start of Block: Section F

Q1 Are you familiar with Open Banking services?

- Not familiar at all
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

Q3 Have you used Internet Banking?

- Definitely not
- Probably not
- Might or might not
- Probably yes
- Definitely yes

Q2 Have you used Open Banking?

- Definitely yes
- Probably yes
- Might or might not
- Probably not
- Definitely not

Q4 Do you plan to use Open Banking?

- Definitely not
- Probably not
- Might or might not
- Probably yes
- Definitely yes

Q5 Please provide if there are any suggestions or other views.

End of Block: Section F

Consumers' Acceptance of Data Sharing in Open Banking - Malaysia

Start of Block: Informed Consent

Q1

Welcome to the research study!

Dear Respondents,

We are interested in understanding your use of Open Banking and your opinion on open banking. For this study, you will be presented with information relevant to Open Banking. Then, you will be asked to answer some questions about it.

The term Open Banking in this questionnaire refers to the sharing of personal financial information with the third-party providers (e.g. Maybank's Treats Card app in Maybank2u platform and Hong Leong Bank, Maybank, Public Bank and CIMB partnered with WeChat Pay) through the Application Programming Interfaces (APIs). The information obtained from this questionnaire will be used in helping consumer in the use of Open Banking in future.

All of the information and respondents' identity will be kept STRICTLY CONFIDENTIAL and will be used for ACADEMIC RESEARCH PURPOSES only. Thank you for your kind participation and cooperation towards this study. The study should take you around 10 to 15 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study. The Principal Investigator of this study can be contacted at Aini Nur Hajjar Binti Khairol Nizam: s2116663@ed.ac.uk.

By clicking the button below, you acknowledge:

Your participation in the study is voluntary. You are at least 18 years of age. You are aware that you may choose to terminate your participation at any time for any reason.

	Yes	No
I consent, begin the study	<input type="radio"/>	<input type="radio"/>

End of Block: Informed Consent

Start of Block: Section A

Q1 Gender

- Male
- Female

Q2 Age

- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- More than 64

Q3 Marital Status

- Married
- Widowed
- Divorced
- Not married

Q4 Level of Education

- Less than high school
- High school graduate
- Bachelor's Degree
- Master's Degree
- Professional Certificate
- Doctorate
- Post-doctorate

Q5 Monthly Income

- Less than RM2,000
- RM2,000 - RM3,999
- RM4,000 - RM5,999
- RM6,000 - RM7,999
- More than RM8,000

Q6 Banking institution that you are using now

- Islamic Bank
- Conventional Bank
- Bot

End of Block: Section A

Start of Block: Section B

Q1 These questions are about the attitude toward the data sharing aspect in open banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that using Open Banking is a good thing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that using Open Banking will give me benefits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that using Open Banking will allow me to access better products and services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 These questions are about other people attitude towards the data sharing aspect in open banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Those people who are important to me use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that those people who are important to me would want me to use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People whose opinions I value would prefer me to use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 These questions are about the perception of the ease or difficulty in sharing data by using open banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would have much more control over using my personal financial data by using Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given the resources, opportunities and knowledge it takes to use Open Banking, it would be easier for me to choose to share my personal financial data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be much more able to share my personal financial data because of the resources, opportunities and knowledge it takes to use Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 These questions are about the perception on the ability of using Open Banking by sharing data to attain gains in term of financial aspects.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I expect to find Open Banking useful in my financial management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Open Banking would enable me to accomplish financial tasks more effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using Open Banking would increase my efficiency in financial management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I were to use Open Banking, then I would increase the chance of getting more competitive banking offers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5 These questions are about the perception on the effort needed to use of Open Banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I expect that my interaction with Open Banking would be clear and understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that it would be easy for me to become skillful at using Open Banking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that I would find Open Banking easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that learning to use Open Banking would be easy for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Section B

Start of Block: Section C

Q1 These questions are about the perception on risk of sharing data in Open Banking.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that services obtained by sharing personal information will lead to poorer performance in general.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that services obtained by sharing personal information will not function at some level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe Open Banking might not perform well and create problems with my accounts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that sharing financial information will lead to potential fraud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that sharing financial Information will lead to financial loss for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I believe the chance of losing money is high when I share personal financial information.

I believe that the risk of misusing personal information is high when sharing personal financial information.

I believe losing control over personal information is high when sharing personal information.

I believe my privacy is at greater risk when sharing personal information because my personal information would be used without my knowledge.

End of Block: Section C

Start of Block: Section D

Q1 These questions are about the perception on financial confidence.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I always know how much money I get in and how much I need to pay the bills each week/month.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at budgeting and managing my money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can sort out any money problems myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at dealing with day-to-day financial matters such as checking accounts, credit and debit cards, and tracking expenses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly keep up with economic and financial news.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2 These questions are about the perception on the awareness and understanding about the financial concepts and procedures.

	False	True
Knowledge in personal finance helps you to avoid being conned in an investment scam.	<input type="radio"/>	<input type="radio"/>
You are spending more if the amount charged to your credit card is more than your salary.	<input type="radio"/>	<input type="radio"/>
Car insurance premium is determined based on the age of the car owner.	<input type="radio"/>	<input type="radio"/>
As a guarantor for a friend's loan, you are entitled to receive part of the loan.	<input type="radio"/>	<input type="radio"/>
Shopping lists help control spending.	<input type="radio"/>	<input type="radio"/>
All types of investments in Malaysia are legal.	<input type="radio"/>	<input type="radio"/>
Individuals must save a minimum of 10% of their income.	<input type="radio"/>	<input type="radio"/>
All forms of risk are insurable.	<input type="radio"/>	<input type="radio"/>
A person can distribute all his property through a will.	<input type="radio"/>	<input type="radio"/>
Shariah products are risk-free.	<input type="radio"/>	<input type="radio"/>
The Credit Counselling and Debt Management Agency (AKPK) provides loan services.	<input type="radio"/>	<input type="radio"/>
The Central Credit Reference Information System (CCRIS) is a credit bureau that collects, processes, stores, and creates credit information.	<input type="radio"/>	<input type="radio"/>
Investments with high returns may be high risk.	<input type="radio"/>	<input type="radio"/>
High inflation means the cost of living is rising rapidly.	<input type="radio"/>	<input type="radio"/>

End of Block: Section D

Start of Block: Section E

Q1 These questions are about the trust aspect in Open Banking environment with the presence of the third-party provider.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I trust banks with my personal financial data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust third parties with my personal financial data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe banks will share my personal financial data with third parties securely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Section E

Start of Block: Section F

Q1 Are you familiar with Open Banking services?

- Not familiar at all
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

Q4 Do you plan to use Open Banking?

- Definitely not
- Probably not
- Might or might not
- Probably yes
- Definitely yes

Q2 Have you used Open Banking?

- Definitely yes
- Probably yes
- Might or might not
- Probably not
- Definitely not

Q3 Have you used Internet Banking?

- Definitely not
 - Probably not
 - Might or might not
 - Probably yes
 - Definitely yes
-

Q5 Please provide if there are any suggestions or other views.

End of Block: Section