Faculty of Business

Digital Financial Services Acceptance Among Low-Income Households in Miri, Sarawak: A Perspective from the Cultural Dimensions Theory

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number HRE2019-0837.

Christine Mening Ngau

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ABSTRACT

The emergence of digital financial services (DFS) presents a unique opportunity for the banking sector to improve the livelihoods of low-income households. Governments around the world have recognized the potential that DFS has towards bridging the financial inclusion gap. In Malaysia, the country has nearly achieved full mobile phone penetration rate and high levels of internet connectivity. Despite this, the country is still unable to reach complete financial inclusion. The inability to achieve complete financial inclusion is a global phenomenon, even in countries with developed economies. Hence, investigating the determinants of behavioral intention to accept digital financial services will provide insights to improve the level of financial inclusion. Nevertheless, limited research on technology acceptance among low-income households has been done. Furthermore, the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services is also rarely investigated. Therefore, this research investigates DFS acceptance among low-income households in Miri, Sarawak while also considering the role of cultural dimensions. There are four main contributions of this study. Firstly, this research is the first UTAUT2 study to propose financial literacy as a new determinant in the framework. Secondly, this research is also one of the few studies to use the UTAUT2 theory which is the most comprehensive, parsimonious and predictive theory of technology acceptance. Thirdly, this research is among the few technology acceptance studies which focuses on a financially vulnerable population, which is the low-income households. Lastly, this study is among the few studies that investigates the moderating influence of cultural dimensions using the Hofstede National Culture Theory which has been shown to influence an individual's thinking pattern and behavior. This research adopts the quantitative research method using purposive and snowball sampling to address the research questions. Questionnaires were distributed throughout Miri City to low-income households, in-person. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to analyze the research data. The data collection period spanned across 7 weeks from 22 December 2019 to 6 February 2020. A total of 343 questionnaires were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). From the data analysis findings, it was concluded that five out of seven of the hypotheses were supported, except for the two moderating hypotheses. Performance expectancy, facilitating

conditions, hedonic motivation, price value and financial literacy were found to have a positive impact on behavioral intention. However, the moderating variables which are power distance and collectivism did not positively moderate the relationship between financial literacy and behavioral intention. This study has theoretical and managerial implications. Firstly, the government and banks should focus on creating awareness about the practical benefits of digital financial services for low-income households based on the confirmed role of the five determinants in the study. Secondly, the government and policymakers must introduce policies that build financial literacy across all walks of life. Thirdly, financial literacy measures done by the government or non-governmental organizations need to focus on persuading individuals about the benefits of digital financial services.

Keywords: Digital Financial Services, Financial Literacy, Cultural Dimensions, UTAUT2, Hofstede National Culture Theory, Low-Income Households

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LIST OF ABBREVIATIONS

AVE	Average Variance Extracted
BI	Behavioral Intention
C	Collectivism
DFS	Digital Financial Services
DTPB	Decomposed Theory of Planned Behavior
FC	Facilitating Conditions
FL	Financial Literacy
HM	Hedonic Motivation
HTMT	Heterotrait-Monotrait Ratio of Correlations
I/C	Individualism/Collectivism
IDT	Innovation Diffusion Theory
PD	Power Distance
PE	Performance Expectancy
PLS-SEM	Partial Least Squares Structural Equation Modelling
PV	Price Value
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Science
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Unified Theory of Acceptance and Use of Technology 2
VIF	Variance Inflation Factor

CHAPTER 1: INTRODUCTION

1.1 Background

The development of the financial sector is central to the economic growth of a country (Park and Mercado 2015). A well-developed financial sector leads to financial development through increased individual saving and efficient tax collection mechanism (Akram 2016). Generally, the financial sector comprises of key stakeholders such as banks, financial institutions and insurance companies which cater to consumers and businesses (Elliott 2010). Through the years, financial sector dynamics have quickly changed to introduce more financial and technological innovations to stay ahead of emerging trends within the financial sector (Laven 2013). Due to the high level of competition within the financial sector, key stakeholders are constantly looking for ways to innovate in order to stay ahead of emerging trends within the financial sector (Radford 2003). One of the most influential technological innovations of all time is digital financial services. According to Alliance for Financial Inclusion (2016), digital financial services is defined as a range of financial services which can be accessed through digital channels such as the internet, mobile phones, electronically enabled cards, tablets, point of sale (POS) terminals, automated teller machines (ATM) or any other digital systems.

The growth of digital financial services is backed through powerful internet connectivity and high levels of automation (Kapadia and Madhav 2020). Through digital financial services, mutual integration between traditional finance and the internet is possible (Liu and Lu 2017). Consequently, this has enabled digital financial services to benefit different walks of life. For individual users, digital financial services enable them to enjoy greater control over their personal finance as financial transactions can be completed anywhere and anytime (Jahan, Ali, and Al Asheq 2020; Ozili 2018). Meanwhile, banks enjoy higher profitability and efficiency through improved automation and unprecedented data harnessing capabilities (Kalaiarasi and Srividya 2012). Hence, banks can now reach new and existing customers effectively, create new product offerings, establish new value chains through financial technology

(FinTech) collaborations, streamline operating costs and reduce operational risks (Yanagawa 2018). Some of the most valuable FinTech companies in the world are Stripe, a payment processor company and Coinbase, a cryptocurrency trading platform (Forbes 2019). Hence, a collaboration between banks and FinTech companies can benefit both parties. Also, governments can increase their tax collection revenue through an exponential increase in digital financial transactions (Manyika et al. 2016). Lastly, countries around the world reap the benefits of increased financial inclusion, as digital financial services can reach areas of the world which have been previously underserved by the banking industry (Wang and He 2020; Ozili 2018). In fact, digital financial services are key towards providing affordable financial services to the underserved community, which are low-income households.

These benefits highlight the key stakeholders in the financial sector which have greatly benefitted through the emergence of digital financial services which is, the banking industry. In the light of this, it is crucial to understand the different types of digital financial services commonly available in the market. A few key examples of digital financial services include payment systems, saving, credit, remittance, insurance and investment opportunities.

Firstly, digital financial services consist of payment systems such as electronic cards and mobile payments (Yawe and Prabhu 2015). Payment is the connective tissue of all financial transactions. In developing countries with poor infrastructure, digital financial services offer access to payment systems of financial institutions. Secondly, digital financial services also consist of saving which is the formal saving of money in financial institutions through ownership of a bank account (Dunham 2001). Households with a bank account are 1.8 times more likely to save money compared to those who do not own a bank account (Hogarth and Anguelov 2003). Thirdly, credit which is the provision of financial resources from formal institutions is also an example of digital financial services (Nguyen and Pham 2018). Through online banking, the application process is convenient. Formal financial institutions are known for their flexible and less predatory terms. Fourthly, remittance which is the transfer of money to another party is also a form of digital financial services. Today, receiving remittance through mobile phones is increasingly common (Hinson 2011). Fifthly, digital financial services also include insurance which is the guarantee of compensation in the event of loss, damage or death in return for a premium. An

example of this is mobile microinsurance which provides low-income households protection against a predefined risk (Radermacher, Ralf, and Brinkmann 2011). Lastly, access to investment opportunities is also available through digital financial services with tools such as mobile trading, social trading and online trading (Gomber, Koch, and Siering 2017).

In this study, the researcher makes a clear distinction between two types of digital financial services model. From the literature, digital financial services are divided into two broad models which are bank-led and non-bank led (Gibson, Lupo-Pasini, and Buckley 2017; Staschen 2018). Aligned with its name, bank-led digital financial services are owned, operated and managed by traditional financial institutions, which are banks. Meanwhile, non-bank led digital financial services models are run by non-bank institutions such as internet service providers (ISPs), telecommunication providers and financial technology startups (Gibson, Lupo-Pasini, and Buckley 2017; Königsheim, Lukas, and Nöth 2017). The focus of this research is on bank-led digital financial services. There are several key reasonings to this. Table 1.1 illustrates the key comparisons between bank-led and non-bank led digital financial services followed by an in-depth description.

Table 1. 1 Key Comparisons Between Bank-Led and Non-Bank Led DFS

Bank-Led Model	Non-Bank Led Model
Offer greater security to the account holders (Obeidat et al. 2020)	Charge higher cost for their services (Ozili 2018)
Provide a stable remuneration of interest to account holders (Babajic and Jukan 2016)	Lack security element (Wandhöfer 2017)
Formal banking institutions are highly established (Bongomin et al. 2018)	No remuneration of interest to account holders (Marshall and Coke 2016)
	Smaller part of the financial ecosystem (Ghiță-Mitrescu et al. 2016)
	Early stages of development (Ghiță-Mitrescu et al. 2016)

This study focuses on bank-led digital financial services because it offers a high level of security to its consumers (Obeidat et al. 2020). Banking institutions are obligated to adhere to strict regulations by the government (Borgers 2009). In events where a banking institution experiences failure such as bankruptcy, the deposit provided by consumers are protected by the deposit insurance. The insurance creates a buffer against financial shocks. Consequently, this reduces the vulnerability of account holders which reduces the need to engage in coping strategies such as selling assets that can diminish the prospect of long-term income growth (Babajic and Jukan 2016). The regulation of the formal financial system upholds consumer protection and ensures a provision of high quality financial services (Bongomin et al. 2018). As banks need support from the government in the form of policies and regulations that promote a positive environment for financial growth, it is in their best interest to adhere to strict financial sector regulations (Babajic and Jukan 2016).

Furthermore, banks provide a stable remuneration of interest to account holders. These interests are available through saving and investment accounts which utilize legal and proven methods to provide returns to account holders. This gives an opportunity to

low-income households to save and invest in income-enhancing assets (Babajic and Jukan 2016). From a long-term perspective, ownership of formal saving accounts has been shown to lead towards an increase in investments in small businesses and creation of micro-enterprises (Babajic and Jukan 2016; Flory 2018). Additionally, formal banking institutions are also highly established. The credibility of a banking institution stems from a highly skilled workforce, up to-date technologies, and wide range of financial services they provide to consumers (Nandru, Anand, and Rentala 2015).

On the other hand, non-bank financial institutions are notorious for charging higher costs for their services compared to banking institutions (Ozili 2018). This is primarily because the customer base of the non-bank financial institutions consists of people with higher risk of defaulting on their payments. Hence, the financial institutions mitigate risks by charging higher interest rates to their customers to make up for their losses. Moreover, non-bank financial institutions often lack security which is key towards stable financial management for low-income households (Wandhöfer 2017). For instance, e-money, which is issued by a non-bank institution is exposed to risk of hackings. There are several high-risk aspects of e-money such as lack of anonymity and portability which may enable extraction of data by third parties. Lack of control over these elements may cause issues, where employees of the e-money company may obtain authentication data to steal consumers' prepaid value (Dehghan and Haghighi 2015). Additionally, the ownership of e-money does not remunerate the account holder through interest payments compared to the use of electronic commercial bank money. This is because e-money often exists as a stored value or prepaid product which is kept with online financial service providers (Marshall and Coke 2016). The non-bank financial service providers such as Paypal or Boost focus on facilitating consumers' financial transactions, with the occasional reward in the form of consumer retail vouchers. Apart from these, no tangible monetary reward is provided to consumers that benefit them in the long-term. Lastly, non-bank digital financial services only make up a smaller part of the financial ecosystem and are still in the early stages of development in comparison to banks (Ghiță-Mitrescu et al. 2016).

Considering all these key differences between bank-led and non-bank led digital financial services, the current study focuses exclusively on bank-led digital financial services as it is more suitable to the needs of low-income households which require financial services with greater security, stable remuneration of interests and a highly

established reputation. Therefore, this research seeks to identify the determinants of the behavioral intention to accept digital financial services in low-income households in Malaysia. This research is important as investigating these determinants can influence the acceptance of digital financial services and help to improve the quality of life for low-income households.

In past literature, digital financial services and e-banking have been used interchangeably. The following section clarifies whether this research distinguishes between these two terms.

1.2 Bank-Led Digital Financial Services and E-Banking

In this study, the term digital financial services refer to bank-led digital financial services. In terms of definition, there is no difference between bank-led digital financial services and e-banking. Services provided by bank-led digital financial services such as payment, saving, credit, remittance, insurance and investment are all available under e-banking. However, the use of the term 'digital financial services' is retained in this study as it seeks to reflect a bigger picture in the effort towards improving the financial inclusion for low-income households. This is evident in the fact that definitions for digital financial services often include both bank-led and non-bank led digital financial services (Gomber, Koch, and Siering 2017; Manyika et al. 2016).

This study acknowledges that access to bank-led digital financial services alone is insufficient to improve the financial situation of low-income households. Aligned with this fact, non-bank digital financial services can play a key role through financial technology (FinTech) companies which are micro, small or medium-sized firms that aim to introduce innovative ways to deliver financial services in the financial market (Saksonova and Kuzmina-Merlino 2017). The presence of FinTech companies in the financial market presents a vital opportunity to improve the financial inclusion of low-income households, which strengthens the impact that bank-led digital financial services make towards financial inclusion (Mosteanu and Faccia 2020; Ozili 2018). However, the role of bank-led digital financial services is the focus in this study as the greater level of security, stability and established reputation of banks are crucial to

address the financial needs of low-income households. Considering all these, digital financial services is retained as the main technology in this study to allow future studies to expand on the use of non-bank led digital financial services as another key area to improve on the financial inclusion of low-income households. In the following sections, an in-depth description on why Malaysia is selected as the location of interest in this study is provided.

1.3 Digital Financial Services Acceptance in Malaysia

Although the internet has been life-changing for humanity, many countries are still unable to achieve complete financial inclusion. According to Dancey (2013), financial inclusion is defined as providing affordable, convenient and safe financial services to the underserved population. Even with high levels of internet penetration in the developed and developing world, World Bank (2018) reported that an estimate of 1.7 billion adults globally are unbanked. According to Rhine and Greene (2013), the unbanked population does not own a checking or saving deposit account with a formal financial institution.

Through the Global Findex Database report, it was revealed that the number of low-income households with a bank account increased from 50 to 76 percent in 2011 to 2014. As a whole, the ownership of bank accounts in Malaysia stands at a commendable rate with the country having the second highest rate of adults owning a bank account (81%), only surpassed by Singapore among all the ten members of the Association of South East Asian Nations (ASEAN) (World Bank Group 2017). The high rate of bank-account ownership in Malaysia can be attributed to one of the notable efforts that Malaysia has carried out to increase the level of financial inclusion, which is agent banking. According to Bank Negara Malaysia (2015), agent banking is defined as the provision of financial services by financial institutions to agents and third party intermediaries which consist of non-bank outlets. Some of the examples of agent banking in Malaysia include convenience stores, petrol stations, Pos Malaysia outlets, bookstores, restaurants and telecommunication agents. Through agent banking outlets, individuals can open savings account without having to go to a bank. This is highly useful especially if the individual is from an area which does not have a bank outlet.

Despite the success with the high level of bank account ownership, a report by MCMC (2018) revealed that only 52.2% of Malaysians use internet banking. Furthermore, The Financial Stability and Payment Systems Report 2017 stated that two million Malaysian adults are unbanked which constitute 8.33% of the adult population (BNM 2017). The two million adults not having a bank account only accounts for Malaysian citizens. If non-Malaysians were to be accounted for in the figure, the number of unbanked adults is 3.9 million people.

A study conducted by UN Capital Development Fund (2019) detailed how low and middle-income Malaysians experience and use digital financial services. Several key findings from this report revealed that the overall awareness of digital financial services among low-income households is very low. However, the level of awareness of digital financial services is the highest among young Malaysians around the age group of 21-25 years old. Despite their high level of knowledge, they are not regular users of digital financial services. The report also revealed that low-income Malaysians are more aware of heavily advertised digital financial services, be it bank-led or non-bank led. Hence, the following section defines and justifies the selection of the target population in this study, which is low-income households.

1.4 Defining Low-Income Households

Low-income households face a multitude of challenges in managing their daily life. For this subpopulation, transferring money incur high costs, while access to credit is very expensive and emergencies can push them further into poverty (Peric 2015). Considering this difficult reality that low-income households face, financial inclusion is key towards helping this community break out of the cycle of poverty. The term financial inclusion is defined as providing the underserved population with access to affordable, convenient and safe digital financial services (Dancey 2013). However, financial inclusion can be further defined into two broad categories which are technology-based and non-technology based. Hence, this study focuses on the technology-based financial inclusion to guide the discussion on the benefits of digital financial services for low-income households. CGAP (2015) defined digital financial

inclusion as the access and use of digital financial services by the underserved population.

Low-income households are defined according to data obtained from DOSM (2017a). In Malaysia, individuals are divided into three income groups which are B40, M40 and T20. According to the national standard, B40 are individuals with a household income below RM4360. Meanwhile, M40 are individuals with a household income between RM4360 to RM9619. Those in the T20 tier have a household income above RM9620. However, the income groups differ among the states in Malaysia.

Aligned with this study, Sarawak's B40 income group is defined as households with income below RM3460. M40 households have an income from RM3460 to RM7609. Lastly, T20 is defined as households with an income equal or above RM7610. In this study, low-income households refer to the B40 income group in Sarawak. Hence, low-income households in the study are individuals in Miri, Sarawak with a household income below RM3460. Table 1.2 provides a visual detail of the income cut-off for all the income groups in Malaysia and Sarawak.

Table 1. 2 Thresholds of Monthly Gross Income in Malaysia and Sarawak

Income Cut-Off			
State	**Bottom 40%**	**Middle 40%**	**Top 20%**
Malaysia	< RM4,360	RM4,360-RM9,619	≥ RM9,620
Sarawak	< RM3,460	RM3,460-RM7,609	≥ RM7,610

Source: Department of Statistics Malaysia (Household Income and Basic Amenities Survey Report) 2017a

Furthermore, another threshold which is the poverty income line (PLI) is also considered in defining the B40 group. According to DOSM (2017a), the poverty line income is defined as the minimum income required by a household to meet their basic needs. Relevant to the target location in this study, which is Miri City, the poverty line income threshold is a gross monthly income below RM1,070 per month. The poverty line income threshold was developed with consideration of the food PLI, non-food PLI and the location of households being investigated. For instance, the food PLI considers the daily minimum calorie requirement to stay healthy. Meanwhile, the non-food PLI considers items such as clothing, rent, fuel, transport, utilities and communication. On the other hand, the characteristics of households pertains to whether the household is located in the urban or rural area (DOSM 2017a). In view of all these descriptions,

low-income households in Miri, Sarawak are defined as households with a gross monthly household income from RM1,070 to RM3,459.

Considering this definition, the study does not include those with a household income below RM1,070 and above RM3,459. In other words, this study does not consider households living in poverty. The reason is because the solution to poverty is not in having access to digital financial services. According to the Malaysian's definition of poverty, people living in this condition have minimal standards of living. With consideration for the food and non-food PLI in the establishment of this threshold, those living in poverty are not likely to have excess money for other needs. In fact, the financial situation of those living in poverty and low-income households can be largely different. Those living in poverty also includes those living in extreme poverty. According to the The World Bank (2019), those living in extreme poverty is defined as people living with less than US$1.90 per day. From the statistics, those living in poverty have a very different financial situation than low-income households.

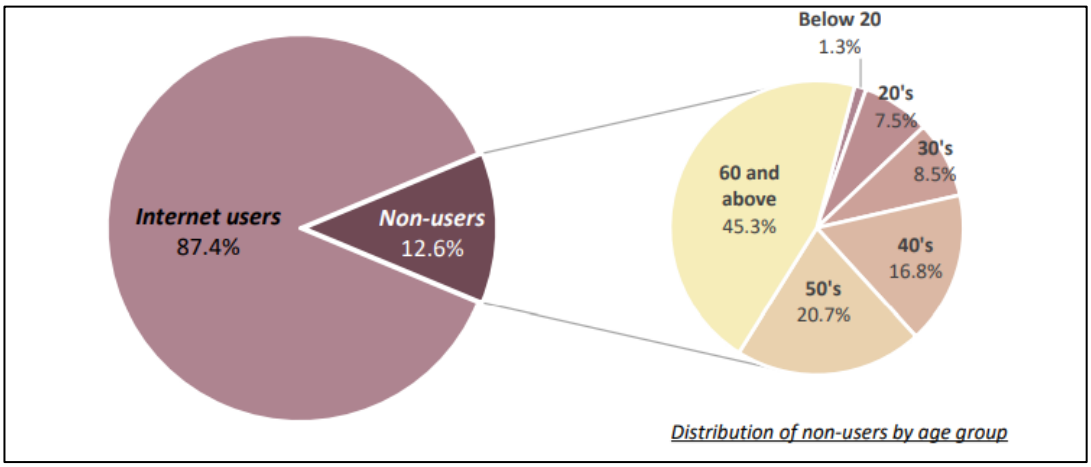
Moreover, past literature has repeatedly shown that poverty is more than just a financial issue. Studies have shown that other dimensions of poverty include education, social protection and housing conditions (Oshio and Kan 2014; Liu, Guo, and Zhou 2018). To eradicate poverty, providing people access to digital financial services does not solve the issue. Hence, it is important to look at a country which has been largely successful at eradicating poverty, which is China. Between 1981 and 2013, China was able to decrease the rate of extreme poverty from 88% to 1.85% (Bikorimana and Sun 2019). In its targeted poverty alleviation (TPA) program, China's proven measures to eradicate poverty are developing industries to create more jobs, relocating poor people living in remote areas to more hospitable areas, establishing ecological compensation policies, improving education and providing social security (Liu, Guo, and Zhou 2018). From these proven steps to eradicate poverty, external support from the government plays a key role. As the role of digital financial services is not prominent for those living in poverty, people living in poverty is not considered in this study. As the definition of low-income households have been stated and justified, it is vital to detail the potential digital financial services hold for low-income households.

1.5 Digital Financial Technology Statistics in Malaysia

Malaysia is a developing country located in the Southeast Asia region, with a population of 32.66 million in the first quarter of 2019 (DOSM 2019a). The following statistics provide a brief overview of the country's economic outlook. In 2018, Malaysia's gross domestic product was RM1229.8 billion, with an inflation rate of 1%. Meanwhile, the unemployment rate stood at 3.3%, with a total labor force of 15.5 million people (MIDA 2019).

Aligned with this fact, Malaysians have shown an encouraging level of internet adoption with 87.4% of the population being internet users in 2018, totaling to 28.7 million internet users. This represents a 10.5% growth rate from only 24.5 million Internet users in 2016 (MCMC 2018). The growth of the internet in Malaysia can be attributed to an upsurge in mobile devices, improved network quality and competitive data plans offered by telecommunication providers. The findings from MCMC (2018) stated that smartphone is the most popular method to access the Internet, with 93.1% of internet users using it compared to other devices such as laptop, desktop, tablet, smart TV, feature phone, TV streaming box, game console, and smart watch. The availability of many access points such as mobile phones and high-speed broadband technology, which are increasingly affordable due to the competitive nature of the market has further boosted the internet growth (Gray, Gainous, and Wagner 2017). Figure 1 illustrates the percentage of internet users and non-internet users in Malaysia, including their age groups.

Figure 1. 1 Percentage of Internet Users and Non-Internet Users in Malaysia

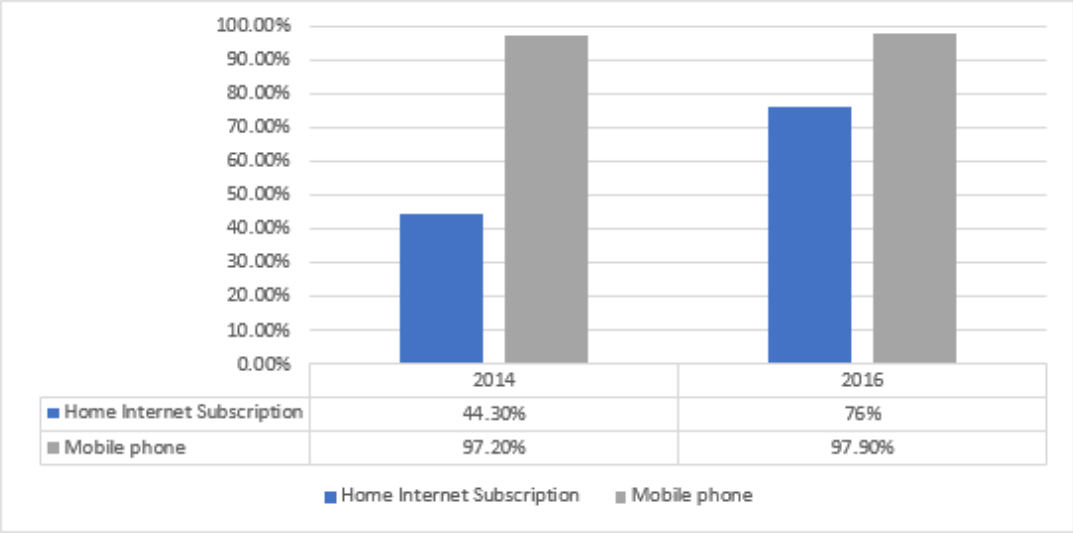


Source: Malaysian Communications and Multimedia Commission (Annual Survey Report) 2018

In Malaysia, non-internet users are primarily individuals over the age of 40 years old (MCMC 2018). The finding of older adults not adopting the internet is consistent with Van Deursen and Van Dijk (2014), whose findings contended that older people are less likely to use the internet because they lack early exposure and peer use of the internet, thus negatively affecting their familiarity with the technology.

Next, Figure 1.2 exhibits the internet subscription at home and mobile phone ownership among Malaysians. The graph compares the statistics between the year 2014 and 2016.

Figure 1. 2 Internet Subscription at Home and Mobile Phone Ownership Among Malaysians

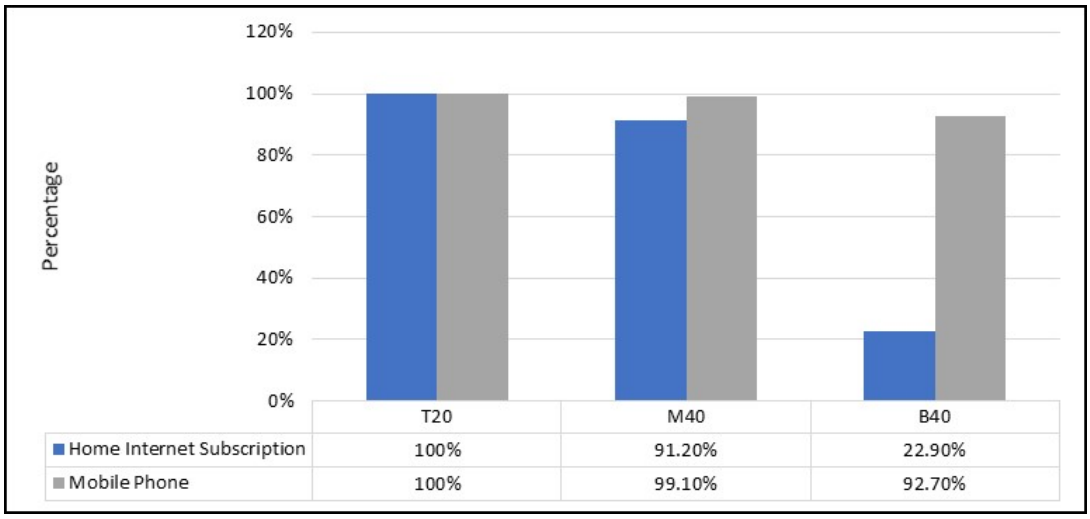


Source: Department of Statistics Malaysia (Household Income and Basic Amenities Survey Report) 2017b

Among all the household equipment, home internet subscription exhibited the greatest improvement with a 31.7% increase. Initially, the percentage of home internet subscription was only 44.3% in 2014. However, this quickly increased to 76% in 2016. Meanwhile, mobile phone ownership only showed a slight 0.7% increase from 97.2% to 97.9% from 2014 to 2016. From these statistics, Malaysians have a high level of mobile phone ownership compared to home internet subscription although the latter exhibited high levels of growth in the past years. Relevant to the target population and location of this study, it is imperative to take a closer look at the home internet subscription and mobile phone ownership across different income groups in Sarawak.

Hence, Figure 3 shows the internet and mobile phone ownership in Sarawak across income groups. From the state's perspective, statistics show that internet subscription in Sarawak has increased to 76% in 2016 compared to a mere 44.3% in 2014. Meanwhile, mobile phone ownership slightly increased to 97.9% in 2016 compared to 97.2% in 2014.

Figure 1. 3 Internet and Mobile Phone Ownership in Sarawak Across Income Groups



Source: Department of Statistics Malaysia (Household Income and Basic Amenities Survey Report) 2017b

From this figure, the B40 population still has an extremely low level of home internet subscription compared to the other income groups. This is a huge difference compared to the T20 income group which has achieved 100% home internet subscription rate. The lack of home internet subscription rate could point to the lack of financial resources in these households where they refrain from to the utility. From a national perspective, Sarawak has the third lowest internet subscription at home at 22.9%, trailing behind Sabah with 16.2% and Kelantan with 9.6%. The lack of home internet subscription can negatively impact the level of uptake that the B40 group in Sarawak has towards digital financial services. However, the mobile phone penetration rate does not show significant differences across all income groups although the B40 group does have the lowest rate at 92.7%. Despite the low home internet subscription rate for the B40 group, mobile phone penetration is extremely high.

This finding is resonated across different studies such as Hinson (2011) which stated that mobile penetration rate exceeds any other communication devices around the world. The huge global success with mobile phones has led to the proliferation of affordable mobile phones and low-cost telecommunication networks (Alkhaldi 2020). From the statistics, the high mobile phone ownership complemented by home internet subscription presents an opportunity for digital financial services to increase its reach to low-income households due to the affordable, ubiquitous and convenient nature of mobile phones.

1.6 Importance of Digital Financial Services for Low-Income Households

There are two main ways where digital financial services could provide help for low-income households. The first way is by enabling them to fight against poverty by improving the level of efficiency for basic financial services (Ozili 2018). As low-income households already have very limited resources to begin with, it is imperative that they manage and use their resources well. This can be done through several digital financial services.

One of the most basic financial services that form the heart of financial transactions is payments. This is key to entrepreneurial opportunities, government to citizen transfers and peer to peer transactions. Unfortunately, low-income households are stuck with traditional payment systems that are slow and costly (Peric 2015). By having access to digital financial services, low-income households can keep their money within the formal financial market with channels such as online banking, mobile wallet and electronically enabled cards. These channels can be used to conduct essential day-to-day banking services such as paying bills, making purchases, obtaining loans, saving money and transferring money (Lin, Wang, and Hung 2020; Kempson and Collard 2012). By providing low-income households with access to essential digital financial services, they can reduce their vulnerability and inequality in the marketplace (Ferrata 2019; Kamran and Uusitalo 2016). In fact, they can store and withdraw their earnings on a safe platform, or directly use debit for their purchases. More importantly, this reduces the risk of theft and robbery of their accumulated earnings.

Additionally, by having payment connectivity to the government, utility providers and peers, this enables low-income households to distribute risks across their network of peers because they can receive payments immediately during emergencies. Peric (2015) highlighted the importance of having access to basic financial services for low-income households to fight against poverty. Kamran and Uusitalo (2016) stated that the low-income households often face time wastage because they must visit bank branches and outlets to pay their bills. This is because low-income households are often deprived of access to formal financial services because they are perceived as risky clients (Babajic and Jukan 2016). Hence, being able to receive social welfare

payments on time and paying utility bills without having to travel a far distance goes a long way towards improving their life quality.

Furthermore, digital financial services provide low-income households with more opportunities to accumulate wealth by having access to advanced digital financial services. By being connected with a formal financial institution, low-income households are linked to providers of credit, insurance and investment (Ozili 2018). The provision of formal credit is highly important towards poverty reduction in developing economies (Duong and Izumida 2002). In fact, Sadoulet and Janvry (1996) posited that limited access to credit is a major obstacle for low-income households in deciding how to manage their expenses. Lack of access to short-term credit often causes the unbanked to turn to informal sources such as money lenders, relatives and friends (Kamran and Uusitalo 2016). For low-income households that are vulnerable to risks such as economic, political, natural disasters or lifecycle-related, insurance can help increase their capacity to deal with such risks (Radermacher, Ralf, and Brinkmann 2011). Furthermore, the possession of insurance is made easy with digital financial services with many banks providing different types of insurance which can be purchased online. By engaging directly in the formal financial market, these low-income households also leave a digital footprint which helps financial institutions to customize their offerings according to their behavior and risk profile (Radcliffe and Voorhies 2012).

Therefore, the benefits of digital financial services are safe payment channels, accessible credit, insurance and investment. Although these benefits can be realized through digital financial services, the lack of financial literacy among low-income households can hinder them from reaping the full benefits of digital financial services. This is discussed in detail in later sections of this chapter. In the following section, it details the location of interest for the study.

1.7 The Regional Focus on Sarawak

The area of interest in this study is Miri City, Sarawak. Sarawak is the largest state in Malaysia with a population of 2.79 million (DOSM 2018). The state's area spans over 124,450 $km^{2.}$ Furthermore, it is divided into 12 divisions, 40 districts, and 26 sub-districts. Hence, the area of interest is Miri City which is under the Miri Division and Miri District. The Official Portal of Sarawak Government (2010) stated that the Miri Administrative District has a population of 300,543 people. Meanwhile, Miri City's population is 40,552 households. This study focuses on Miri City for two main reasons.

Firstly, Miri City is located within Sarawak, which is a state that has a proven disadvantage in terms of resources which are impacting the financial well-being of its residents. To demonstrate the lack of resources in Sarawak, three economic indicators have been adopted from DOSM (2017a) which are median income, concentration of B40 households and level of poverty. The first economic indicator which shows the lack of resources in Sarawak is median income. In 2016, Sarawak's median income increased to RM4163 compared to RM3778 in 2014. Despite this, the state's median income was still below the national median income of RM5228. Additionally, the median income for Miri, Sarawak was RM5144 in 2016, a slight decrease from RM5208 in 2014. The low median income which is not at par with the national median income indicates that the financial situation for the average household may not be in excellent condition.

The second economic indicator is the concentration of B40 households in Sarawak. The three districts with the highest number of B40 households in Sarawak are Kuching, Sibu, and Miri. In fact, the Miri district has the third highest concentration of B40 households in Sarawak with 8% of the population being low-income households.

The following table illustrates the percentage of low-income households in the Top 10 districts with the highest number of low-income households. In Table 1.3, it is evident that Miri is among the districts which high level of low-income households in Sarawak.

Table 1. 3 Percentage of Low-Income Households in Sarawak Districts

District	Percentage of Low-Income Households (%)
Kuching	19.1
Sibu	11.0
Miri	8.0
Serian	4.4
Sri Aman	3.6
Betong	3.5
Samarahan	3.4
Sarikei	3.4
Marudi	3.2
Kapit	3.1

Source: Department of Statistics Malaysia (Household Income and Basic Amenities Survey Report) 2017b

This leads to the third economic indicator which is the high levels of poverty that the state continues to experience (White 2015). Although Sarawak is the largest state in Malaysia and is rich in resources (Aeria 2016), Sarawak continues to experience high levels of poverty (White 2015). In 2014, Sarawak tied with Kelantan as states with the third highest level of poverty at a 0.9% rate. In 2016, Sarawak managed to reduce the level of poverty down to 0.6% of the population. However, it has worsened in terms of poverty ranking as it became the state with the second highest level of poverty within the nation.

Secondly, the regional focus on Sarawak for this study also aligns with the Sarawak government's interest to digitalize the state's economy. This is evident in a recent Sarawak state policy released 'Sarawak Digital Economy Strategy 2018-2022' which outlines the areas for digital economy transformation within the next 5 years (Jabatan Ketua Menteri Sarawak 2018). The policy details the plans for transformation in 15 different areas which are digital government, tourism, manufacturing industry 4.0, agriculture, digital infrastructure, digital skills and talent management, digital inclusivity, digital and data infrastructure, digital health, e-commerce, research and development, smart city, cyber security, digital innovation and entrepreneurship and social sectors. With the emergence of new technologies such as big data, cloud computing, artificial intelligence, and blockchains, the Sarawak government believes that digital economy results in greater efficiency and bring about more economic opportunities (Sarawak Biodiversity Centre 2018). More importantly, the Miri district

is relevant to this policy because the city was among the three cities selected for the establishment of the 'Digital Innovation Hub' which aims to accelerate Sarawak's economic growth through knowledge, innovation and technology (SMA-TEGAS 2019). Additionally, this policy is also relevant to the needs of the B40 group as its mission is to reduce the socio-economic divide within the state.

1.8 Statement of Problem

Despite massive telecommunications infrastructure and high mobile phone ownership around the world, the lack of uptake of digital financial services still plagues countries, be it in developed, developing or least developed economies (World Bank 2018b). In particular, access to digital financial services (DFS) is very low, especially among low-income households. The role of DFS is more prominent in developing and least developed economies where millions need this service but still do not have access to basic financial services. In Malaysia, the majority of low-income households are not aware of the potential that digital financial services hold (UN Capital Development Fund 2019). A closer look at the lives of low-income households revealed the challenges of living with limited access to digital financial services. There are no safe avenues to store their money. Meanwhile, access to credit is often limited with very expensive and inflexible terms (Peric 2015). Low-income households also often find themselves up against a psychological barrier which makes it hard for them to fight against poor financial decisions. Compared to the average household, low-income households often find themselves trapped in a constant cycle of poor financial decisions which can last for generations. While findings on the determinants of technology acceptance have been done in the past, studies on the acceptance of digital financial services among low-income households are scarce. Hence, understanding the factors affecting behavioral intention specific to low-income households is key towards bridging the gap towards financial inclusion.

Furthermore, financial literacy among Malaysians is still very low (Loke 2016; Alekam, Salleh, and Mokhtar 2018; Sabri and Aw 2019). Consequently, low levels of financial literacy can lead to poor financial management (Cole, Sampson, and Zia 2011). The lack of financial literacy among Malaysians is evident with the increasing

numbers of bankruptcies within the country every year, while youths take on an excessive amount of debt with poor retirement planning choices (Ganesan, Pitchay, and Mohd Nasser 2020). In relation to this study, the lack of financial literacy is common among low-income households as they lack understanding of basic financial concepts (Nguyen and Doan 2020). On the most basic level of financial decision making, low-income households are challenged in the area of personal finance, which encompasses simple tasks such as saving money to more difficult tasks such as tax and retirement planning (Huston 2010). With low levels of financial literacy, low-income households are unable to make optimal financial decisions in their life. Considering this reality, providing only digital financial services to low-income households is insufficient. Previous studies have shown that financial exclusion happens because of the lack of knowledge about financial offerings that are available. Without financial literacy, low-income households are unable to make optimal decisions when selecting the most suitable digital financial services according to their needs. Given the large variety of digital financial services today, the lack of financial literacy may further confuse low-income households which may eventually cause them not to use the digital financial services at all. On the contrary, empowering the low-income households with financial literacy enables them to maximize the benefits that they receive from digital financial services (Atkinson and Messy 2013; Bongomin et al. 2017). Hence, investigating the role of financial literacy in empowering the acceptance of digital financial services is key towards achieving financial inclusion, especially among low-income households.

In addition, the acceptance of digital financial services is commonly generalized across different cultures. As technology acceptance is a culturally embedded decision, technology acceptance may differ according to different countries because members of the societies in respective nations behave according to their cultural dimensions (Deans et al. 1991). Past studies also posited that cultural dimensions influence technology acceptance (Hillier 2003; McCoy, Galletta, and King 2018; Srite 2006; Straub, Keil, and Brenner 1997; Teo and Huang 2018; Teo, Huang, and Hoi 2018). For instance, the cultural dimension of power distance, which is found to be at a high level in Malaysia, indicates that any technological changes may need to origniate from a higher authority (Hall 1989; Hofstede 2001). Hence, low-income households in Miri, Sarawak may be more inclined to rely on hierarchal structures and centralized decision

making. Therefore, this study seeks to explore whether power distance plays a moderating role in technology acceptance.

On the other hand, low-income households in Miri City, Sarawak, is part of a collectivist Malaysian society (Hofstede, Hofstede, and Minkov 2010) . From past literature, people from collectivist societies are likely to seek approval from their social circles when deciding to accept digital financial services (Abbasi et al. 2015; Khan, Hameed, and Khan 2017). In comparison, societies with high values for individualism make technology acceptance decisions without considering approval from the society (Baptista and Oliveira 2015). This study takes the approach to measure the moderating impact of cultural dimensions in Sarawak on an individual level, as cultural dimensions should not be generalized to an entire country's population as the impact of culture differs according to the individual. Similarly, this study seeks to explore whether collectivism plays a moderating role in technology acceptance. Hence, the findings on the moderating impact of cultural dimensions provide critical insights towards paving the path in achieving financial inclusion with strategies that is fitting to the national culture.

1.9 Research Questions

This study seeks to reframe the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model to predict the behavioral intention of low-income households in Miri, Sarawak towards the acceptance of digital financial services. The UTAUT2 model is the most accepted conceptual model for consumers' adoption of technology, which was developed as an integrated framework of eight technology acceptance theories. With reference to the problem statement, this study seeks to find the best possible answers for the following research questions:

RQ 1: What are the determinants of the behavioral intention to accept digital financial services?

RQ 2: How do cultural dimensions moderate financial literacy to the behavioral intention to accept digital financial services?

1.10 Research Objectives

The following are the two main objectives of the study:

With reference to the problem statements and research questions, the following are the two objectives of the study:

RO 1: To identify the determinants of the behavioral intention to accept digital financial services

RO 2: To investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services

1.11 Research Hypotheses

Corresponding to the research questions, the following research hypotheses have been formulated:

RQ 1: What are the determinants of the behavioral intention to accept of digital financial services?

H1: There is a positive relationship between performance expectancy (PE) and the behavioral intention (BI) to accept digital financial services

H2: There is a positive relationship between facilitating conditions (FC) and the behavioral intention (BI) to accept digital financial services

H3: There is a positive relationship between hedonic motivation (HM) and the behavioral intention (BI) to accept digital financial services

H4: There is a positive relationship between price value (PV) and the behavioral intention (BI) to accept digital financial services

H5: There is a positive relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

RQ 2: How do cultural dimensions moderate the behavioral intention to accept digital financial services?

H6: Power Distance (PD) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

H7: Collectivism (C) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

1.12 Operational Definition of Terms

The following are the key terms which are used throughout this dissertation. This section details the operational definition from literature and the operational definition in this study.

- **Household**

A household is defined as a group of related or non-related people that often live together in common living quarters and make provisions for living expenses such as food and other necessities.

- **Low-Income Households**

Low-income households are defined as individuals living in Sarawak with a total household income from RM1,070 to RM3,460.

- **Digital Financial Services**

Digital financial services are defined as bank-led digital financial services which can be accessed through digital channels such as the internet, mobile phones, electronically enabled cards, tablets, phablets, POS terminals and ATM machines. Examples of digital financial services include payments, credit, saving, remittance and insurance.

- **Performance Expectancy**

Performance expectancy refers to the extent that low-income households believe that the use of digital financial services is beneficial for their life.

- **Facilitating Conditions**

Facilitating conditions is the extent to which low-income households perceive that facilities and resources are provided to assist in digital financial services acceptance.

- **Hedonic Motivation**

Hedonic motivation is defined as the level of pleasure and fun that low-income households experience when they use digital financial services.

- **Price Value**

Price value is defined as the extent to which low-income households believe that the benefits of using digital financial services overweigh the cost, in which they pay to use it.

- **Financial Literacy**

Financial literacy refers to the level of basic financial knowledge and the ability to apply a combination of financial awareness, knowledge, skill, attitude and behavior in financial decision-making processes among low-income households.

- **Power Distance**

Power distance is the extent to which low-income households believe that power inequality is a norm.

- **Collectivism**

Collectivism refers to the extent that low-income households are expected to look after extended families, which reciprocate loyalty in return for their care.

- **Behavioral Intention**

Behavioral intention refers to the extent to which low-income households intend to use digital financial services in the future.

1.13 Contributions of Study

This research contributes to the field of technology acceptance, digital financial services, financial literacy, low-income households, and cultural dimensions. Despite the high mobile penetration and increasing bank infrastructure worldwide, digital financial services have yet to achieve full acceptance, even in developed economies. As financial inclusion becomes a priority for many countries, studies on the acceptance of digital financial services are gaining momentum. This study seeks to investigate the determinants which impact the acceptance of digital financial services among low-income households in Malaysia, while also analyzing the moderating role of cultural dimensions. Findings from this study is the key to developing tools, programs, and services that improve the technology acceptance level of digital financial services. Moreover, understanding the moderating role of cultural dimensions can encourage the creation of strategies and approaches for low-income households that addresses digital financial services acceptance. There are four main contributions of this study.

Firstly, this research is the first UTAUT2 study to propose financial literacy as a new determinant in the framework. Financial literacy is key towards the optimal and efficient use of financial services (Cole, Sampson, and Zia 2011). Given the proliferation of complex financial services in the market, World Bank (2009) contended that financial literacy is increasingly important for low-income households to increase financial inclusion. As financial literacy equips low-income households with basic financial knowledge and the ability to apply this knowledge in financial decision making, this can positively impact low-income households as they are able to evaluate and select the right digital financial services for their needs (Atkinson and Messy 2013). In a nutshell, equipping low-income households with financial literacy give them more control over their financial future, leading to optimal use of digital finance and avoid predatory financial service providers (Bongomin et al. 2017).

Secondly, this research is also one of the few studies to use the UTAUT2 theory which is the most comprehensive, parsimonious and predictive theory of technology acceptance (Venkatesh, Thong, and Xu 2012). The strength of the UTAUT2 model is that it synthesizes all its constructs from previous competing technology acceptance models (Venkatesh et al. 2003). More importantly, the UTAUT2 is a key extension of

the original UTAUT model as it added three new determinants which are hedonic motivation, price value and habit which are suited for consumer context of technology acceptance (Venkatesh, Thong, and Xu 2012). In relation to digital finance, the UTAUT2 is the ideal model to measure technology acceptance as the end users are consumers in a voluntary context. The strength of the model is shown as it was able to explain 74% of behavioral intention and 52% of the use element compared to the UTAUT which only explained 56% and 40% for the same elements. Therefore, the UTAUT2 theory provides a strong conceptual foundation for this study to investigate the technology acceptance of digital financial services among low-income households.

Thirdly, this research contributes to the body of knowledge by being among the few technology acceptance studies which focuses on a financially vulnerable population, which is the low-income households. Studies on the technology acceptance of this subpopulation are scarce, despite their financial vulnerability. According to The Financial Stability and Payment Systems Report 2017, two million Malaysian adults are unbanked which makes up 8.33% of the adult population (BNM 2017). An important finding from this statistic is that 86% of them consist of individuals with low-income or no income at all. Moreover, this figure only comprises of Malaysian citizens (BNM 2017). If the figure were to consider non-Malaysians, it amounts to 3.9 million adults. From these statistics, a clear direction for Malaysia to move towards to achieve greater financial inclusion is understanding the factors which impact technology acceptance among low-income households.

There has been a number of target population being studied in UTAUT2 frameworks in the past. From a literature review of UTAUT2 researches that study financial technologies, most of them focus on technology acceptance among bank customers (Alalwan, Dwivedi, and Rana 2017; Farah, Hasni, and Abbas 2018; Gharaibeh and Mohd Arshad 2018; Salim, Mahmoud, and Khair 2016). Past studies have also investigated technology acceptance among a specific group of university students (Khan, Hameed, and Khan 2017). Additionally, there are also researches that studied a general population conducted by Goularte and Zilber (2019) and Kwateng, Atiemo, and Appiah (2018). More importantly, low-income households are more likely to make poor financial decisions that bear long-term impacts. Their high dependence on physical cash and using alternative financial services keep them trapped in a cycle of poverty and financial difficulties. As a whole, the importance of DFS for low-income

adults has rarely been analyzed in any previous studies. Therefore, the current study is different from all previous studies in the perception of focusing on the importance of DFS for low-income households.

Lastly, this study is among the few studies that investigates the moderating influence of cultural dimensions using the Hofstede National Culture Theory which has been shown to influence an individual's thinking pattern and behavior (Hofstede 2001; Rooney 2013). From past researches, there have been scholars such as Goularte and Zilber (2019) and Khan, Hameed, and Khan (2017) that utilized the Hofstede cultural dimensions as moderating variables. However, the results from these findings have been inconsistent in determining whether cultural dimensions were significant in the context of technology acceptance. Hence, the inconsistent findings and the low number of researches using cultural moderators in UTAUT2 warrants the need for research in a different cultural context to find clarity in the relationship between cultural moderators and technology acceptance. In a nutshell, this study is crucial as it seeks to investigate the acceptance of digital financial services (DFS) among low-income household which can provide key findings for governments, policy makers, financial institutions, educators and non-profit organizations in charting the path towards greater financial inclusion.

1.14 Organization of Dissertation

This study was organized according to the Curtin University Malaysia dissertation formatting guidelines. This research is presented in five chapters.

Chapter 1 introduces the background of the study to the readers. The framework of the study is also presented through key elements which are the background of the study, statement of problem, research questions, research objectives, research hypotheses, contributions of study, operational definition of terms, limitations of study and the organization of dissertation.

Chapter 2 is an extensive review of the literature which establishes the relevance of this study in lieu of existing literature. The literature review consists of past studies on digital financial services, low-income households, technology acceptance theories and national culture theories. Towards the end of this chapter, it details the conceptual framework established from existing technology acceptance and national culture theories to support the framework. The literature gap of this study is also further refined at the end of the chapter.

Chapter 3 describes the research methodology. In this chapter, it defines how each research question is tested. Some of the key elements being detailed in this chapter are research type, research design, pilot study data analysis and ethical considerations.

Chapter 4 reports the results of the study through the data obtained from the survey instrument. In other words, this chapter reports the findings from the data collection method presented in chapter 3. This chapter also presents the results of the data analysis to test each hypothesis stated in chapter 2. Findings in this chapter are presented using two software which are Statistical Package for the Social Sciences (SPSS) and SmartPLS.

Chapter 5 discusses the findings from chapter 4 in detail. Justification for the data analysis results for each hypothesis is presented. The implications of the research are presented through two perspectives which are theoretical and managerial. Research limitations and sugggestions for future research are presented. Lastly, the research is concluded with a conclusion section.

1.15 Summary

This chapter provides an important overview on the importance of investigating the acceptance of digital financial services in Miri, Sarawak. This was done by providing an overview of the status quo for low-income households' digital financial services acceptance in Miri, Sarawak. A contextual justification for the selection of the location of interest in this study was also detailed. From this background information, the research questions, objectives and hypotheses are laid out. An organization of dissertation is also provided to map out the flow of the thesis.

CHAPTER 2: LITERATURE REVIEW

In this study, it aims to identify the determinants of the behavioral intention to accept digital financial services in low-income households in Malaysia. Additionally, it also seeks to investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services. Aligned with these objectives, Chapter 2 presents a synthesis of literature review which details findings on current and past literature.

Hence, Chapter 2 is divided into the following sections: (2.1) The Importance of Digital Financial Services for Low-Income Households, (2.2) Studies on Digital Financial Services Acceptance in Malaysia, (2.3) Theories on Technology Acceptance, (2.3.1) Unified Theory of Acceptance and Use 2 (UTAUT2), (2.4) Financial Literacy, (2.5) Hofstede National Culture Theory, (2.6) Conceptual Framework and (2.7) Literature Gap and (2.8) Summary.

2.1 The Importance of Digital Financial Services for Low-Income Households

In propagating the importance of digital financial services for low-income households, past literature has shown that it helps low-income households in several ways.

The first way is by enabling low-income households to fight against poverty (Ozili 2018; Rizwan and Catherine 2016). Through digital financial services, this improves the level of efficiency for basic financial services. Many low-income households still transact almost completely using cash, assets and informal money lenders for their financial transactions (Rana, Luthra, and Rao 2019). As majority of the global population have access to a mobile phone, this enables them to access digital financial services where these services can be delivered through devices such as electronic cards, chips, tablets or electronic systems (Alliance for Financial Inclusion 2016). This can help to reduce the dependency of low-income households on cash transactions.

The expansion of digital financial services through mobile devices also improves financial inclusion through convenient and affordable access to financial services

especially to the underserved community such as low-income households due to the mobility, convenience and low cost of these channels (Ali et al. 2020; Sassi and Goaied 2013). This notion is supported by a study conducted by Kansal (2016) which found that people living in poor financial situation, which is the bottom of pyramid (BOP) adopted digital financial services because of the low cost and affordability. A key example of a digital financial service which encourage adoption among low-income households is mobile banking. The highly accessible device lowers transaction costs significantly. Hence, low-income households can benefit from increased financial inclusion.

Furthermore, Thomas (2016) stated that digital financial services can reach low-income households more efficiently as it is affordable for them. More specifically, the author found that mobile wallets is highly efficient as the prepaid reload feature allows people to easily load money into the wallet without the need for cash or cards, which is often difficult for low-income households to access due to barriers in registration process such as lack of identification or lack of minimum funds required to own these services. Additionally, the greater reach towards low-income households is supported by the fact that it only needs to utilize current telecommunication infrastructure as there is a widespread use of mobile telecommunication networks, even among low-income households. As there is a lack of financial infrastructure in rural areas and in the community that low-income households reside in, mobile phones can help to decrease the infrastructure gap through mobile banking, particularly in developing countries (Fall, Orozco, and Akim 2020; Mishra and Bisht 2013). High levels of convenience when using digital financial services was also found to be a main reason for the acceptance of digital financial services (Gupta 2018).

Secondly, digital financial services benefit low-income households as it provides opportunities to build wealth through access to advanced digital financial services. By being connected with a formal financial institution, low-income households are linked to credible providers of credit, insurance and investment (Ozili 2018). From literature, access to credit is vital to low-income households as a development tool which helps stabilize household income (Silong and Gadanakis 2019). Due to the lack of access to credit, low-income households are unable to optimally invest in education and other long-term income generating opportunities (Mustapa, Al Mamun, and Ibrahim 2018). In Malaysia, access to microcredit was found to be an important tool towards reducing

the economic vulnerability of low-income households. In fact, past literature has shown that access to credit results in positive financial outcomes for Malaysian households (Al-Mamun, Mazumder, and Malarvizhi 2014; Omar et al. 2012; Samer et al. 2015). Through digital financial services, low-income households can have access to safe credit. For instance, Minto et al. (2016) found that farmers often used digital financial services to obtain credit. Past literature have proven that access to credit for farmers can transform their living conditions as it increases their income and improves their self-confidence (Ogbuabor and Nwosu 2017). Apart from access to credit, low-income households also have access to insurance through digital financial services. As low-income households are exposed to different types of risks such as economic, political or lifecycle-related, owning an insurance can help to reduce the impact of those risks to them (Radermacher and Brinkmann 2011).

Despite these evidences that show low-income households can benefit from digital financial services, there are still many challenges in encouraging the acceptance among low-income households. For instance, a study conducted by Thomas (2016) found that the level of awareness for digital financial services was high among low-income individuals. However, this did not correspond to the actual usage rate among low-income individuals. The reason for the lack of use was these low-income individuals lack confidence and knowledge on how to use mobile wallet. Although the usage rate is low, the high level of awareness is a good indication that there is interest among low-income households. To increase the level of acceptance, Minto et al. (2016) suggested that financial education programs and availability of financial institutions must be provided to low-income households.

As a summary, studies conducted on the technology acceptance of digital financial services by low-income households globally have shown that these services have a positive impact on their livelihood. In fact, the decrease in poverty levels is prominent from the findings of these studies. As the importance of digital financial services for low-income households has been covered, the next section details the studies of technology acceptance in Malaysia to provide a better context on the country that this study focuses on.

2.2 Studies on Digital Financial Services Acceptance in Malaysia

From a thorough literature search, there have been several digital financial services acceptance studies conducted in the context of Malaysia. From these studies, there are three key trends in the research being conducted. Firstly, these studies largely focus on one subsection of digital financial services. Secondly, the technology acceptance theories that are referred prominently use outdated theories. Lastly, these studies also commonly introduce new constructs as part of the digital financial services acceptance framework. The following sections provide more details on the trends.

The first key trend is the prominent focus on only one subsection of digital financial services. From past literature, the definitions of digital financial services expand across different types of services such as electronically enabled cards, tablets, point of sale (POS) terminals, automated teller machines (ATM) or any other digital systems (Alliance for Financial Inclusion 2016). Although so, digital financial services acceptance in Malaysia is still largely focused on one type of digital financial service. One of the highly studied digital financial service in Malaysia is mobile banking. For instance, Goh and Sun (2014) analyzed the role of gender in the technology acceptance of Islamic mobile banking. Similarly, Arshad, Mat, and Ibrahim (2018), Mahad et al. (2015), and Krishanan et al. (2016) investigated the adoption of mobile banking in Malaysia. Apart from mobile banking, Chin and Ahmad (2015) investigated the technology acceptance of a single e-payment system among Malaysian consumers. The study combined the use of card payment, mobile payment and internet payment to form a single e-payment system for the banking industry. The focus on only one subsection of digital financial services in Malaysia, especially in recent studies warrants the need for a study which covers many other elements of digital financial services. More importantly, the focus on only one subsection of digital financial services does not represent the reality that most individuals face. This is because people engage with multiple digital financial services in their daily life. Considering this fact, this highlights the importance of this study as it covers the key elements of digital financial services for a financially vulnerable population in the society.

The second key trend is the use of outdated technology acceptance theories. In the field of technology acceptance, there are many theories which have been introduced over the years. Some of the examples include the Technology Acceptance Model (TAM) by (Davis 1985; 1989), the innovation diffusion theory (IDT) by Rogers (1995), the innovation diffusion theory (IDT) by Rogers (1995) and theory of planned behavior (TPB) by Ajzen (1991). However, as evident by these dates when these theories were created, there are many preceding technological acceptance theories which have been created. The latest theory for technology acceptance is the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) by Venkatesh, Thong, and Xu (2012). However, many of the digital financial services acceptance studies in Malaysia often utilize outdated technology acceptance theories. One of the most prominent theories being used is the Technology Acceptance (TAM) model. This is evident through studies such as Goh and Sun (2014) which used a modified Technology Acceptance Model (TAM) to analyze the acceptance of Islamic mobile banking in Malaysia. Similarly, Chin and Ahmad (2015) also adopted the Technology Acceptance Model (TAM), which hypothesized that convenience, design and risk affect the perceived usefulness and perceived ease of use for the e-payment system in Malaysia. Additionally, Low et al. (2017) also investigated the loyalty of consumers towards mobile banking services in Malaysia using a modified Technology Acceptance Model (TAM). Similarly, Abdullah et al. (2019) investigated the moderating role of e-strategy in internet banking adoption among Malaysians using a modified Technology Acceptance Model (TAM).

Meanwhile, other technology acceptance theories apart from TAM were also utilized. For instance, Mahad et al. (2015) used the Decomposed Theory of Planned Behavior (DTPB) by Taylor and Todd (1995) to predict behavioral intention of Malaysian users in using mobile banking. Meanwhile, Yuen, Yeow, and Lim (2015) adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) in a comparative technology acceptance study which investigated internet banking adoption in the United States and Malaysia. Additionally, Arshad, Mat, and Ibrahim (2018) also utilized the Unified Theory of Technology Acceptance (UTAUT) developed by Venkatesh et al. (2003) to investigate the acceptance of mobile banking among users in Klang, Malaysia. From these studies, it is evident that the use of the latest technology acceptance theories such as the Unified Theory of Acceptance and Use of

Technology 2 (UTAUT2) is not as common. In fact, as many of these studies are considered recent since it was published in the past 5 years, the use of theories such as Technology Acceptance Model (TAM) is inappropriate especially in the context of digital financial services. This is because this theory has been expanded and synthesized into technology acceptance models which are far more comprehensive and has greater predictive power. Given that the UTAUT2 was synthesized from 8 past technology acceptance theories and it has been proven to produce a substantial improvement in the variance through behavioral intention (Alazzam et al. 2016), the use of previous technology acceptance models especially TAM is deemed as inappropriate. Therefore, this study is one of the few studies of technology acceptance in Malaysia which utilizes the latest technology acceptance theory, which is UTAUT2 to investigate the acceptance of digital financial services among low-income households.

The third prominent trend is the addition of new constructs or determinants to predict digital financial services acceptance in Malaysia. From an analysis of past literature, these studies often introduce new determinants apart from the ones proposed in the original technology acceptance theories. For instance, Goh and Sun (2014) introduced new determinants in the modified Technology Acceptance Model (TAM), which are perceived financial cost, social norms, perceived credibility and perceived self-expressiveness to predict the behavioral intention to use. Similarly, Chin and Ahmad (2015) also adopted the Technology Acceptance Model (TAM), which hypothesized that convenience, design and risk affect the perceived usefulness and perceived ease of use for the e-payment system. In addition, Krishanan et al. (2016) used the Technology Acceptance Model (TAM) and introduced four new determinants which are relative advantage, perceived risk, perceived cost and perceived interactivity. In a similar vein, Mahad et al. (2015) introduced several new determinants under the Decomposed Theory of Planned Behavior (DTPB) by Taylor and Todd (1995) which are perceived security, perceived privacy, financial risk, time risk and performance risk. Meanwhile, Yuen, Yeow, and Lim (2015) which utilized the Unified Theory of Acceptance and Use of Technology (UTAUT) introduced several new determinants which are attitude towards use, perceived credibility, self-efficacy and anxiety. Arshad, Mat, and Ibrahim (2018) also utilized the Unified Theory of Technology Acceptance (UTAUT) and introduced a new determinant which is the credibility

factor. To the best of our knowledge, financial literacy has never been added as a determinant in any of the technology acceptance theories. This points out the novel contribution of this study. A detailed section on the literature review for literature review is provided in the upcoming sections. In the next section, more details on the theories on technology acceptance are provided. Meanwhile, the following Table 2.1 summarizes the key studies on digital financial services acceptance studies conducted in Malaysia.

Table 2. 1 List of Digital Financial Services Acceptance Studies in Malaysia

Source	**Technology**	**Purpose of study**	**Theory**	**Key findings**
Goh and Sun (2014)	Mobile banking	Analyze the role of gender in the technology acceptance of Islamic mobile banking in Malaysia	Technology Acceptance Model (TAM)	The findings found that only perceived self-expressiveness affects the behavioral intention to use mobile banking among male Malay Muslims. Meanwhile, the factors which affect the female Malay Muslims are perceived usefulness and social norms.
Chin and Ahmad (2015)	Single e-payment system	Investigating the technology acceptance of a single e-payment system among	Technology Acceptance Model (TAM)	Results found that convenience and design, have positive relationship with

		Malaysian consumers.		perceived usefulness and perceived ease of use. Meanwhile, perceived risk has a negative relationship with consumers intention to use.
Mahad et al. (2015)	Mobile banking	Assessing the adoption of mobile banking in Malaysia	Decomposed Theory of Planned Behavior (DTPB)	This study is a conceptual study, which only lays the conceptual framework as a practical guideline for future researchers to improve their work.
Yu, Balaji, and Khong (2015)	Internet banking	Examining the role of trust and trustworthiness in determining the continuance of internet banking use among Malaysian users	NA	Results revealed that competence, integrity and shared values are antecedents of trustworthiness and trust. However, the role of benevolence is not supported in building trustworthiness and trust to ensure

				internet banking continuance.
Yuen, Yeow, and Lim (2015)	Internet banking	Comparing the technology acceptance of internet banking adoption in the United States and Malaysia	Unified Theory of Acceptance and Use of Technology (UTAUT)	Results revealed that only performance expectancy, attitude towards use and perceived credibility were antecedents of intention to use internet banking.
Ahmed and Phin (2016)	Internet banking	Investigating the technology acceptance of internet banking	NA	Findings from this study revealed that usefulness, ease of use and risks of using internet banking all determine the adoption of internet banking.
Krishanan et al. (2016)	Mobile banking	Investigating the acceptance of mobile banking among Malaysian consumers	Technology Acceptance Model (TAM)	It was concluded that perceived usefulness, perceived ease of use, relative advantage and perceived interactivity are the determinants of the acceptance for mobile

				banking. Meanwhile, perceived cost and perceived risk have a negative influence on intention to adopt mobile banking.
Low et al. (2017)	Mobile banking	Investigating the loyalty of consumers towards mobile banking services in Malaysia	Technology Acceptance Model (TAM)	From the data analysis, it was found that the subjective norms, convenience and perceived ease of use are all important factors which encourage loyalty towards using mobile banking among Malaysians.
Arshad, Mat, and Ibrahim (2018)	Mobile banking	Investigating the acceptance of mobile banking among users in Klang, Malaysia.	Unified Theory of Technology Acceptance (UTAUT)	All the determinants which are performance expectancy, effort expectancy, social influence, facilitating conditions, and credibility factor were found to significantly

				impact adoption of mobile banking as well. However, it was found that experience does not moderate effort expectancy.
Abdullah et al. (2019)	Internet banking	Investigating the moderating role of e-strategy in internet banking adoption among Malaysians.	Technology Acceptance Model (TAM)	Results showed that e-strategy does positively moderate the role of perceived usefulness towards behavioral intention to adopt internet banking. Furthermore, the role of perceived usefulness towards the behavioral intention is also significant.
Normalini, Ramayah, and Shabbir (2019)	Internet banking	Investigating the security factors that impact the continuous adoption of internet banking among Malaysian employees in both	NA	This study found that perceived authentication, perceived confidentiality and perceived data integrity are all significant determinants of

		private and public sector		the behavioral intention to continuously use internet banking. However, perceived non-repudiation was found to be non-significant because Malaysian consumers may view the other determinants to be more important compared to non-repudiation issues.

2.3 Theories on Technology Acceptance

The study on technology acceptance is one of the most mature streams of research for information systems (IS) research. In fact, technology acceptance originates from the field of psychology prior to being introduced into IS research (Niehaves and Plattfaut 2014). Furthermore, Damghanian, Zarei, and Kojuri (2016) stated that understanding why people use or reject a technology is a key in information research. In the past few decades, a variety of technology acceptance models have been introduced, drawing from the fields of psychology and sociology (Kwateng, Atiemo, and Appiah 2018). In relation to digital finance acceptance, there are several technology acceptance theories which have been used in the past. One of the earliest technology acceptance theories

is the Technology Acceptance Model (TAM) by Davis (1985, 1989) which has been used in multiple studies to explain the acceptance of mobile banking (Abroud et al. 2013; Kesharwani and Bisht 2012; Kleijnen, Wetzels, and de Ruyter 2004; Moshele; Koenaite, Chuchu, and Villiers 2019; Shin and Lee 2014) and internet banking (Arunkumar 2008; Pikkarainen et al. 2004; Sharma, Govindaluri, and Al Balushi 2015; Wang et al. 2003).

Additionally, the innovation diffusion theory (IDT) by Rogers (1995) was also utilized to explain internet banking (Al-Ajam and Nor 2013; Giovanis, Binioris, and Polychronopoulos 2012) and credit card use (Jamshidi and Hussin 2018). Also, the theory of reasoned action (TRA) by Ajzen and Fishbein (1980) was used to explain internet banking (Al-Ajam and Nor 2013; Juwaheer, Pudaruth, and Ramdin 2012). Moreover, the theory of planned behavior (TPB) by Ajzen (1991) has been utilized to explain the acceptance of internet banking (Lin, Wu, and Tran 2015; Rondovic, Dragasevic, and Rakocevic 2016; Yadav, Chauhan, and Pathak 2015) and mobile banking (Glavee-Geo, Shaikh, and Karjaluoto 2017). Other theories include the decomposed TPB model (DTPB) by Taylor and Todd (1995) which was used to explain internet banking (Shih and Fang 2004) and mobile banking (Yu 2014).

Given the number of technology acceptance models available, Venkatesh et al. (2003) saw an urgent need to integrate constructs from past models into a more comprehensive framework. From this, the Unified Theory of Acceptance and Use of Technology (UTAUT) was created. In fact, the UTAUT was synthesized from eight competing models of technology acceptance which are the theory of reasoned action (TRA), technology acceptance model (TAM), motivational model (MM), theory of planned behavior (TPB), combined TAM and TPB (C-TAM-TPB), model of PC utilization (MPCU), innovation diffusion theory (IDT) and social cognitive theory (SCT) (Venkatesh et al. 2003). The UTAUT has been primarily used to study technology acceptance in an organizational context using four variables which are performance expectancy, effort expectancy, social influence and facilitating conditions. The popularity of this model was proven by its widespread use to explain digital finance technologies such as internet banking (Abushanab and Pearson 2007; Wang, Cho, and Denton 2017; Mbrokoh 2016; Sarfaraz 2017).

However, Venkatesh, Thong, and Xu (2012) saw an urgent need to update the UTAUT model to keep up with the rapid increase in consumer technological devices. Hence, the UTAUT2 was introduced with three new variables which are habit, hedonic motivation and price value to reflect the change from an organizational to individual context. The acceptance of various digital finance technologies has been investigated using the UTAUT2 model such as internet banking (Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Yaseen and El Qirem 2018), mobile banking (Baabdullah et al. 2019; Baptista and Oliveira 2015; 2017) and mobile wallet (Madan and Yadav 2016).

In the field of technology acceptance, there has been a recent development in the extension of the UTAUT2 theory. In a recent article, Farooq et al. (2017) extended the UTAUT2 theory by introducing a new determinant which is personal innovativeness. This newly extended theory is also known as the Unified Theory of Acceptance and Use of Technology 3 (UTAUT3). The new determinant being introduced is defined as a personality trait which reflects the tendency of an individual to adopt a technological innovation (Schillewaert et al. 2005). The study confirmed the role of personal innovativeness in determining the behavioral intention and use of lecture capture system among executive business graduates. Despite this study being a new development in technology acceptance, the role of the new dimension has not been largely validated in new contexts. In fact, a study conducted by Gunasinghe et al. (2019) used the UTAUT3 to investigate the adoption of academicians towards e-learning. The results of this study did not support the role of personal innovativeness towards the adoption of e-learning. More importantly, adding personal innovativeness as a new determinant does not warrant the creation of a new theory. In fact, the definition of personal innovativeness as an attitude is too broad and it is better explained through the original UTAUT2 determinants that are more specific and measurable. Given these reasons, the current study does not consider the use of UTAUT3 as it is not widely validated and the addition of the new determinant, personal innovativeness does not warrant the creation of a new theory. Hence, the next section details more about the main theory used in this study which is UTAUT2.

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

This study uses the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as the key conceptual framework to predict the behavioral intention of low-income households in using digital financial services. The UTAUT2 is a theory which investigates the determinants of technology acceptance in a consumer's context (Venkatesh, Thong, and Xu 2012). In this theory, there are seven determinants that impact the behavioral intention to accept a technology. These seven determinants were synthesized from past technology acceptance theories. The determinants are performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit. In this study, only four determinants from the original UTAUT2 theory were selected which are performance expectancy, facilitating conditions, hedonic motivation and price value. Subsequently, an additional determinant which is financial literacy is added into the framework. Details on this determinant are found in the later sections.

The four UTAUT2 determinants selected are aligned to the needs of the sample of the study, which are low-income households. For instance, the determinant of effort expectancy defined by Venkatesh et al. (2003) as the level of effort that an individual perceives to be required to utilize a technology is omitted. The reason for this is that the use of digital financial services includes channels such as the internet, mobile phones and POS terminals which are well known for their convenience, speed and ubiquity. Moreover, these channels used to access digital financial services are also highly user-friendly, which means that the amount of effort needed to use digital financial services is relatively minimal (Hinson 2011; Oluwatayo 2013). In fact, there have been several studies conducted in Malaysia which supported the fact that Malaysians believe that digital financial services are user friendly (Normalini 2019; Amin 2016). Additionally, there have been numerous past studies which detailed the success digital financial services have in countries with large low-income households population that do not have advanced infrastructure to support digital financial services (Mago and Chitokwindo 2014; Ouma, Odongo, and Were 2017; Siddik, Kabiraj, and Joghee 2017; Lenka and Barik 2018). Despite the barrier with the lack of instructure,

the success of digital financial services in these countries prove that digital financial services are easy to use.

Next, social influence is also not considered in this study. Venkatesh et al. (2003) stated that the impact of social influence is prominent under mandatory circumstances as there are punishment and rewards associated with compliance and non-compliance. As the use of digital financial services in this study is non-mandatory, social influence is not considered. The definition of social influence by Venkatesh et al. (2003) is the extent to which individuals believe the opinions of others are important to adopt a technology. In relation to the exclusion of social influence for low-income households, Kraus et al. (2012) posited that low-income households are largely affected by structural influences in the form of social inequality, inefficient social services or expectations of discrimination due to their social class. Hence, the concept of structural influences which largely differs from social influence is the reason for the exclusion of the construct in this study.

Additionally, habit is also another determinant not considered in this study. Habit is defined as the level to which people perform behaviors automatically which is acquired through knowledge and learning (Alalwan et al. 2015; Limayem, Hirt, and Cheung 2017). Furthermore, experience is also a prerequisite in the formation of a habit, which pertains the level of exposure that an individual has to the particular technology (Venkatesh, Thong, and Xu 2012). In relation to this study, low-income households lack experience with digital financial services, which disrupts the formation of habit. As low-income households are unfamiliar with digital financial services, habit as a determinant is not significant and irrelevant to the framework.

There are three key reasons why the UTAUT2 was selected as the anchor framework for this study. Firstly, UTAUT2 is the most comprehensive, parsimonious and predictive model for technology acceptance. Secondly, the UTAUT2 analyzes technology acceptance from a consumer's standpoint instead of an organizational context as seen in UTAUT (Venkatesh, Thong, and Xu 2012). Thirdly, the UTAUT2 model has been proven to produce a substantial improvement in the variance through behavioral intention (Alazzam et al. 2016). Compared to UTAUT which only explained 56% and 40% in variance for behavioral intention and use, UTAUT2 was able to explain 74% and 52% for the same elements (Venkatesh, Thong, and Xu 2012).

The following section details the four determinants of the UTAUT2 model selected for this study and behavioral intention, which is the dependent variable in theory.

a) Performance Expectancy

Firstly, performance expectancy is defined as the extent that an individual believes the use of technology can enhance their performance (Tai and Ku 2013; Venkatesh et al. 2003). In digital financial services context, it reflects the degree to which an individual believes that the use of digital financial services benefit them (Venkatesh et al. 2003). Moreover, performance expectancy is the strongest determinant regardless of whether it is a voluntary or non-voluntary circumstance. From past frameworks, the root constructs of this determinant are perceived usefulness, extrinsic motivation, job-fit, relative advantage and outcome expectations (Venkatesh et al. 2003). Additionally, studies have shown that performance expectancy is the most important determinant in the technology acceptance of digital finance (Baptista and Oliveira 2015; Martins, Oliveira, and Popovič 2014; Morosan and DeFranco 2016; Rahi, Abd. Ghani, and Ngah 2019; Savic and Pesterac 2019).

For instance, features in mobile banking which demonstrate performance expectancy is the flexibility to conduct digital financial transactions, anywhere, at any time (Ngugi et al. 2020; Nustini, Yuni; Fadhillah 2020; Alalwan, Dwivedi, and Williams 2016). Additionally, Zhou, Lu, and Wang (2010) stated that internet banking enable users to enjoy features such as convenient payment methods, timely response and service effectiveness. In fact, Sánchez-Torres et al. (2018) further reaffirmed that the performance expectancy features that users obtain from internet banking are the economic benefits and high level of convenience of the service. In the past, there were empirical studies proving that performance expectancy plays a key role in digital financial services adoption.

Recently, there have been many empirical studies which proved that performance expectancy has a significant positive impact on the intention to use mobile banking, which is a prime example of digital financial services (Arshad, Mat, and Ibrahim 2018; Farah, Hasni, and Abbas 2018; Rahi and Abd. Ghani 2018; Sarfaraz 2017). Past researches have shown that the use of mobile banking offers a wide range of

advantages such as high ubiquity and high level of flexibility which make users perceive that they gain a lot of benefits from the use of the digital financial service (Tan and Lau 2016a). In relation to this study, some of the benefits of digital financial services to low-income households include promoting asset building, encouraging efficient allocation of money through savings and encouraging economic growth through timely access to flexible credit (Dancey 2013).

One of the key areas where the potential of digital financial services can be leveraged for low-income households is government social cash transfers. Dancey (2013) stated that the electronic delivery of cash through formal banking accounts increases the level of financial inclusion for low-income households. In fact, the use of formal banking accounts to channel electronic social cash transfers has been recognized as one of the most powerful tools to fight against poverty. By using digital financial technologies such as debit cards, credit cards, automated teller machines (ATM) and point of sale (POS) devices, electronic social cash transfers provide an opportunity for low-income households to participate in the formal financial system. Hence, low-income households benefit from the use of digital financial services by being able to access financial management tools that help them to become more resilient against financial shocks.

Therefore, if low-income households believes that the use of technology is advantageous to them, they are more motivated to use it (Alalwan, Dwivedi, and Williams 2016; Venkatesh et al. 2003). Given these arguments, this study proposes the following hypothesis:

H1: There is a positive relationship between performance expectancy (PE) and the behavioral intention (BI) to accept digital financial services

b) Facilitating Conditions

Facilitating conditions is defined as the extent to which an individual perceives that facilities and resources are provided to assist in technology acceptance (Venkatesh et al. 2003; Venkatesh, Thong, and Xu 2012). The root constructs of this determinant are perceived behavioral control and compatibility. Past studies have shown that facilitating conditions is a significant determinant of technology acceptance for digital finance (Alalwan, Dwivedi, and Rana 2017; Gharaibeh and Mohd Arshad 2018; Rahi, Abd. Ghani, and Ngah 2019; Savic and Pesterac 2019). The use of a digital financial service channel requires the users to possess certain level of skills, resources and technical infrastructure (Alalwan et al. 2015; Alalwan, Dwivedi, and Williams 2016). This is supported by Martins, Oliveira, and Popovič (2014) which stated that internet banking users need to know how to use computers and connect it to the internet. Furthermore, there are other costs involved such as internet bills and digital financial services transaction fees. Hence, users are more motivated to adopt digital financial services if they have support and the resources necessary to access these digital channels. For low-income households that have very limited skills, resources and technical infrastructure, it is also vital for digital financial services to be compatible to the current technologies that they possess. For instance, low-income households are more likely to use internet banking if the website or application is compatible with their technological devices such as tablets or mobile phones.

In recent studies, there has been empirical support which states that facilitating conditions impact the behavioral intention to adopt digital financial services such as mobile banking (Alalwan, Dwivedi, and Rana 2017; Arshad, Mat, and Ibrahim 2018). In studies concerning internet banking, facilitating conditions have also been found as a key predictor for behavioral intention (Martins, Oliveira, and Popovič 2014). However, there are also studies which disproved the role of facilitating conditions as a key predictor. For instance, Farah, Hasni, and Abbas (2018) found that facilitating conditions is insignificant in predicting the use of mobile banking. This is because facilitating conditions may be insignificant in cultures and environments where existing infrastructure are inadequate to support the widespread use of mobile banking (Mbrokoh 2016).

In Malaysia, 54.2% of its population are internet banking subscribers which means that many have the facilitating conditions required to access digital financial services (BNM 2019). By having adequate facilitating conditions, this provides people with a psychological sense of control that impacts their adoption of an existing or new technology (Farah, Hasni, and Abbas 2018). Therefore, if low-income households perceive that they receive adequate support through facilities and resources, they are more likely to accept digital financial services. As low-income households lack resources, the availability of facilitating conditions is key towards their acceptance of digital financial services. As stated by Oliveira et al. (2016), the availability of facilitating conditions increases the behavioral intention for technology acceptance.

Hence, this study posits:

H2: There is a positive relationship between facilitating conditions (FC) and the behavioral intention (BI) to accept digital financial services

c) Hedonic Motivation

Hedonic motivation is defined as the level of pleasure and fun that an individual experience when they use technology (Venkatesh and Brown 2005). The concept of hedonic motivation highlights intrinsic utilities with features that invoke feelings of entertainment, joy, fun and playfulness (Venkatesh, Thong, and Xu 2012). In fact, the intrinsic utilities that hedonic motivation represent, complement extrinsic utility such as performance expectancy in the same UTAUT2 model. More importantly, hedonic motivation represents hedonic impulses which are non-functional and emotional in nature (Farah, Hasni, and Abbas 2018). Therefore, it is based on an individual's affective needs. In relation to digital financial services, formal financial institutions need to consider the pleasure and enjoyment that their potential users attain from the use of their services.

From past researches, individuals are more likely to adopt a technology if they enjoy using it (Alalwan et al. 2015; Curran and Meuter 2007; Holbrook and Hirschman 1982). As consumers start using new technology, they are usually attracted to its novelty which leads to increased hedonic motivation (Holbrook and Hirschman 1982).

However, as people get more accustomed to using technology, the impact of hedonic motivation starts to decrease as people focus more on the usefulness of the technology (Venkatesh, Thong, and Xu 2012). In this study, it has been shown that a majority of the unbanked consist of low-income households. This implies that many low-income households have not adopted digital financial services or have limited experience using the service. Additionally, both users and non-users of digital financial services can participate in this study. Considering the target sample in this study, hedonic motivation is likely to play a huge role in determining the use of digital financial services among low-income households as it represents an early use of the technology.

Recent empirical studies have shown that hedonic motivation plays a key role in determining the intention to adopt digital financial services. For instance, support for the role of hedonic motivation on behavioral intention has been established for mobile banking (Alalwan, Dwivedi, and Rana 2017; Gharaibeh and Mohd Arshad 2018; Farah, Hasni, and Abbas 2018). In relation to digital financial services, the use of its channels is often done using mobile devices. According to Arcand et al. (2017), mobile devices are often related to feelings of enjoyment. Therefore, the use of digital financial services which provide applications such as mobile banking often invokes feeling of pleasure and entertainment because of the aesthetically pleasing visuals (Lee and Lee 2020). Aligned with this, a study conducted by Rahi, Ghani, and Ngah (2020) on the adoption of internet banking in Malaysia found that website design plays a role in the technology acceptance. The importance of appealing visuals in an application to invoke feelings of enjoyment is further reaffirmed by Sahoo and Pillai (2017). For instance, more financial institutions are implementing the 'gamification' of their digital financial services. According to Baptista and Oliveira (2017), 'gamification' is the act of applying game mechanics and game design techniques on systems and services. Across all walks of life, many enjoy playing games where this trend is expected to increase the capture rate and sustain the interest of digital financial services users. Venkatesh, Thong, and Xu (2012) stated that providing a fun and enjoyable environment for technology users has been shown to establish a positive perception of the technology.

As evident from past studies, this study stipulates:

H3: There is a positive relationship between hedonic motivation (HM) and the behavioral intention (BI) to accept digital financial services

d) Price Value

Price value is defined as the extent to which an individual believes that the benefits of using a technology overweigh the price they pay to use it (Dodds, Monroe, and Grewal 1991a). When considering the use of technology, Zeithaml (1988) posited that it is common for people to compare monetary cost with the benefits received to determine the value of the service. Additionally, price value is a new determinant added by Venkatesh, Thong, and Xu (2012) to UTAUT2 to reflect the shift from a mandatory to the non-mandatory setting. Compared to an organizational setting where the use of a system is mandatory, and the cost is covered by the organization, consumers often must bear the cost of using technologies themselves in a consumer-use setting (Alalwan, Dwivedi, and Rana 2017). Hence, for a customer to adopt a technology, they must perceive that the benefits they obtain from using a technology is greater than the price they pay to use it.

Some examples of the financial costs that may be incurred from the use of digital financial services include internet bills, cost of mobile devices, initial service setup costs and transaction fees. These monetary costs of using digital financial services could hinder adoption if people perceive the benefits, that they receive are insignificant compared to the monetary costs incurred. Example of the benefits that users can obtain from the use of mobile banking include the overall perception of the functionality, enjoyment, service quality, usefulness, interactivity and accessibility (Arcand et al. 2017). Therefore, if people perceive that benefits they receive is greater than the monetary cost of using digital financial services, the price value is positive.

The relationship between price value and the behavioral intention to adopt digital financial services has been empirically proven in literature. For instance, the role of price value has been proven to lead to the behavioral intention to adopt mobile banking (Alalwan, Dwivedi, and Rana 2017; Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Baptista and Oliveira 2017). In relation to this study, low-income households which mostly have already possessed a mobile phone can potentially benefit from the

high levels of convenience and flexibility that digital financial services provide. More importantly, the use of digital financial services such as Automated Teller Machines (ATMs) and internet banking promotes greater safety for their assets and improve their financial management skills.

Low-income households are known to be the economically and socially vulnerable group. Given the disadvantage that they experience in the society today, digital financial services are key towards improving their level of financial inclusion by being involved in the formal financial market. By having secure, timely and convenient access to financial services through digital financial services, this enables low-income households to fight against poverty, encourage entrepreneurship and be more resilient towards financial shocks (Dancey 2013).

Accordingly, this study proposes:

H4: There is a positive relationship between price value (PV) and the behavioral intention (BI) to accept digital financial services

e) Behavioral Intention

The dependent variable in this study, behavioral intention is defined as the extent that an individual intends to use technology in the future (Warshaw and Davis 1985). In fact, the behavioral intention was drawn from past theories of social psychology which utilized it as a determinant of IT use (Davis, Bagozzi, and Warshaw 1989). Additionally, Du (2011) stated that past researches have proven a correlation between attitude and intention. Over the years, behavioral intention became the dominant determinant for IT use especially for consumer use context (Venkatesh et al. 2003). This is further supported by Taylor and Todd (1995) and Venkatesh et al. (2003) which established that behavioral intention is a reliable antecedent of actual usage.

In this study, it is crucial to distinguish between acceptance and adoption. The concept of adoption is defined as an individual's intentional decision to accept a technology and use it (Haddon 2003). In contrast, technology acceptance relates to the willingness of an individual to use a technology (Teo 2014). In the context of the acceptance of digital financial services, it is not related to whether low-income households use the

technology in their daily life but rather if they accept or reject the implementation of the technologies. Hence, from an adaptation of Fishbein and Ajzen's (1975) definition of behavioral intention, this construct can be defined as the measure of the likelihood that an individual intends to adopt digital financial services.

From the original UTAUT and UTAUT2 theory, the construct of 'use behavior' has been utilized as a dependent variable which has a direct relationship with behavioral intention (Venkatesh et al. 2003; Venkatesh, Thong, and Xu 2012). In the UTAUT2, the construct was measured using self-reported usage frequencies which range from "never" to "many times per day". Self-reported usage is often used as a subjective measure of use in studies about technology solutions (Hossain 2017). However, technology studies that used self-reported usage have found that respondents level of recall for usage rate is very poor (Redmayne, Smith, and Abramson 2013). In relation to this study, measuring the actual use of digital financial services is not possible from a legal perspective. Therefore, this study adopts behavioral intention as a dependent variable.

The use of this variable is supported by past studies that have analyzed the technology acceptance of digital finance and findings have shown that behavioral intention leads to actual use of the technology (Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Ali Abdallah Alalwan, Dwivedi, and Rana 2017; Baptista and Oliveira 2017; Goularte and Zilber 2019; Martins, Oliveira, and Popovič 2014). As past studies have primarily shown that behavioral intention leads to actual use of digital financial services, the actual use of digital financial services is not be measured as it is beyond the scope of this study.

2.4 Financial Literacy

In this study, financial literacy is a new determinant introduced in this research framework. Therefore, it is added as a new determinant apart from the other determinants derived from the UTAUT2 theory. To understand financial literacy better, it is important to understand the definition of this determinant. So far, there is no standardized definition of financial literacy. However, there is a consensus that it comprises of basic financial knowledge and the ability to apply this knowledge in the

financial decision-making processes. Additionally, Huston (2010) stipulated that an individual who is financially literate can comprehend and apply their financial knowledge when making decisions. Similarly, OECD (2011) defined financial literacy as a combination of awareness, knowledge, skill, attitude, and behavior when making financial decisions. Relevant to this study, World Bank (2009) posited that low-income households can benefit from financial literacy as it helps them learn and utilize financial knowledge in a manner that is relevant to their life.

With low levels of financial literacy, individuals cannot use complex financial services to its full potential especially with the availability of complex financial offerings (Sharma, Khan, and Thoudam 2020). Cole, Sampson, and Zia (2011) stated that low-income households which are not familiar with financial services simply choose not to use them. In contrast, high levels of financial literacy can significantly improve the financial security and quality of life for low-income households (Bongomin et al. 2017). An important contention made by Bongomin et al. (2017) is that only providing access to financial services for low-income households is insufficient. Instead, low-income households also need good financial literacy to evaluate and use relevant financial services for their needs.

More importantly, World Bank (2008) also stated that financial literacy is key towards improving the quality of financial services. A basic level of understanding is necessary to help low-income households evaluate different financial offerings such as bank accounts, credit cards, loans, insurance and investments (Ganesan, Pitchay, and Mohd Nasser 2020; Nguyen and Doan 2020; Bongomin et al. 2017). A study conducted by Atkinson and Messy (2013) found that the lack of knowledge about the financial offerings available is one of the main reasons for financial exclusion. As people are unsure about how financial services work, Bongomin et al. (2017) further posited that this leads to poor consumption of financial offerings. As a result, these financial offerings are not used optimally. In fact, the provision of multiple financial services and products may further confuse low-income households, which contradicts the potential of digital finance to improve their livelihood.

With better financial literacy, Hauff et al. (2020) and Braunstein and Welch (2002) stated that it improves financial behaviors such as savings, retirement planning, owning a bank account, investment management and debit management. For low-

income households, higher financial literacy helps them to avoid predatory financial services, which encourages the use of mainstream financial services. Hence, low-income households living in developing countries can benefit from financial literacy as it facilitates access, encourage the use financial services, improve savings rates, establish creditworthiness and can lead to poverty reduction (Lotto 2020; Atkinson and Messy 2013; World Bank 2009). A recent study by Matita and Chauma (2020) investigated the role of financial literacy to the use of mobile financial services. However, this study only examined non-bank mobile financial services which is different from what this study focuses on which is bank-led digital financial services. From a thorough literature review, it was found that there is a lack of studies which link financial literacy to bank-leddigital financial services or engagement in online economic activities. However, there are empirical studies which link financial literacy to participation in financial services. One of the examples of financial services which has been investigated is banking. In a study conducted by Astuti and Trinugroho (2016), it investigated the relationship between financial literacy and engagement in banking in Indonesia. The study targets poor people from the Indonesian region as they are often associated with unsatisfactory levels of financial literacy (Cameron et al. 2014). The study empirically proved that the higher the level of financial literacy in an individual, the greater the engagement of poor people with banks. Similarly, Henager and Cude (2016) examined the relationship between financial literacy and financial behavior. In fact, financial behavior was further classified into short-term and long-term financial behavior. On one hand, short-term financial behavior refers to spending and emergency saving behavior. Meanwhile, long-term financial behavior refers to retirement saving and investing behavior. From an analysis of the results, it was found that the relationship between financial literacy and short-term and long-term financial behavior was supported across different age groups.

In a similar vein, Königsheim, Lukas, and Nöth (2017) assessed the relationship between financial knowledge and risk preferences on the demand for digital financial services. According to the definition of financial literacy by OECD (2011), financial knowledge is one of the key elements which make up financial literacy. It seeks to investigate the likelihood of traditional bank customers switching to the use of digital financial services. Although the study conducted by Königsheim, Lukas, and Nöth (2017) may seemed similar to this dissertation, the provider of digital financial services

that they were referring to are Financial Technology startups or better known as "FinTechs". More specifically, they were studying the switch from a traditional bank provider to FinTechs. Data analysis from the survey results revealed that financial knowledge and risk preferences are positively correlated to the demand for digital financial services. Also, results found that customers that prefer traditional banks require greater compensation to make the switch to digital financial services providers. From this analysis, it is evident that financial literacy has a positive relationship with the engagement with economic activities. In Table 2.2, it summarizes the financial literacy studies which relates to participation in financial services.

Thus, this study stipulates:

H5: There is a positive relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Table 2. 2 List of Financial Literacy Studies Which Relates to Participation in Financial Services

Source	**Country**	**Purpose of Study**	**Key findings**
Astuti and Trinugroho (2016)	Indonesia	Investigating the relationship between financial literacy and engagement in banking in Indonesia	From the data obtained, it was empirically proven that the higher the level of financial literacy in a society, the greater the engagement of poor people with banks.

Henager and Cude (2016)	NA	Examining the relationship between financial literacy and financial behavior.	From an analysis of the results, it was found that the relationship between financial literacy and short-term as well as long-term financial behavior was supported across different age groups. A key finding in this study was that as the age groups increased, individuals were more likely to engage in long-term financial behavior.
Königsheim, Lukas, and Nöth (2017)(Kramer 2016)	Germany	Assessing the relationship between financial knowledge and risk preferences on the demand for digital financial services	Data analysis from the survey results reveal that financial knowledge and risk preferences are positively correlated to the

			demand for digital financial services. Also, results found that customers that prefer traditional banks require greater compensation to make the switch to digital financial services providers.
Zhao et al. (2018)	United States	Investigating the impact of culture and financial literacy on financial services participation	Results revealed that financial literacy and risk attitude have positive relationships with the attitude towards paid professional financial advisors. In regards to risk attitude, risk-seeking individuals displayed a positive attitude towards

			professional financial advisors compared to risk-averse individuals.
Bongomin et al. (2018)	Uganda	To assess the relationship between financial literacy and financial inclusion of the poor in rural Uganda	The study concluded that both financial literacy and cognition have a significant and positive impact on the financial inclusion of the poor in rural Uganda.
Jana, Sinha, and Gupta (2019)	India	To investigate the impact of demographic and socio-economic variables on financial literacy and the use of financial services	Financial literacy, income and domicile are proven to be determinants of the use of financial services.

2.5 Hofstede National Culture Theory

To fill in a gap in technology acceptance research, the Hofstede National Culture Theory was selected to investigate the moderating role of cultural dimensions in digital financial services acceptance. This theory stated that members of a society share a common element called cultural dimensions, which can distinguish them from members of another country (Hofstede 1980a). Furthermore, this theory comprised of five cultural dimensions which distinguish the members of a country from another. These cultural dimensions are power distance, individualism versus collectivism, masculinity, uncertainty avoidance and long-term orientation. According to Sun, Lee, and Law (2019), Hofstede's National Culture Theory by Hofstede (1980) provides the most effective guideline to measure culture. In fact, this theory is utilized in this study as it seeks to address a shortcoming in the UTAUT2 framework which is the inability to measure the impact of culture in technology acceptance.

Broadly speaking, culture is defined as the unique characteristics of a social group which is the collective programming of the minds that differentiates the members of a group from another (Hofstede 2001). The importance of culture expands across many areas of life. In fact, Hall (1976) posited that there is no area of human life that has not been affected by culture. The impact of culture can be seen in different elements of life such as personality, how people express themselves, thought process, problem solving skills, city planning, up to the organization of economic and government systems. Clearly, the impact of culture is prominent regardless if an individual is aware of it.

However, it is important to narrow down the definition of culture to relate it to economic outcomes. This because there has been criticism stating that culture is too broad for it to be related to economic outcomes (Greif 2006). Hence, Guiso, Sapienza, and Zingales (2006) defined culture as customary beliefs that are passed down by ethnic, religious and social groups which remain fairly unchanged throughout generations. In fact, Becker (1996) posited that culture bears a huge impact on people because individuals do not have control over their culture. In other words, culture is given to an individual throughout their life. This is evident through the fact that an individual cannot change their ethnicity, race or family history. Even if culture change

is possible, Botticini and Eckstein (2005) stated that culture modification only occurs over the course of centuries or millennia. Relating culture to economic outcomes, Guiso, Sapienza, and Zingales (2006) further posited that the two main ways that culture can impact economic outcomes are through beliefs and preferences. Consequently, these beliefs affect trust which is a necessary element in every economic transaction (Kassim and Haruna 2020). Past empirical studies have proven that level of trust is positively correlated to the economic performance in a community (Knack and Keefer 1997; Zak and Knack 2001).

Given these evidence, it proves that cultural hypotheses can be tested and are economically important to be tested for vital economic issues (Guiso, Sapienza, and Zingales 2006). Furthermore, a recent development in literature by Sharma, Singh, and Sharma (2020) investigated the acceptance of internet banking using the original UTAUT theory and utilized two cultural moderators which are individualism and uncertainty avoidance. Similarly, the study utilized individuals as a unit of analysis through individual's espoused national cultural values. Aligned with this study, this indicated that it is possible to test the moderating role of cultural dimensions between financial literacy and the behavioral intention to accept digital financial services. This is because this study tests the moderating impact of cultural dimensions towards an economic outcome, which is the behavioral intention to accept digital financial services that points to the choice to engage in the banking industry. As the role of culture towards economic outcomes has been discussed, it is now vital to understand how culture relates to technology acceptance.

Deans et al. (1991) stated that culture is vital towards determining the effectiveness of information systems. Hence, the diverse cultural backgrounds that individual users come from must be assessed when investigating technology acceptance (Hillier 2003; McCoy, Galletta, and King 2018; Straub, Keil, and Brenner 1997; Teo and Huang 2018; Teo, Huang, and Hoi 2018). Moreover, culture is an important reflection of the rules and social norms within a society which further influences an individual's thinking patterns and behavior (Hofstede 2001; Rooney 2013). In fact, Nelson, Klara, and Clark (1994) defined technology as a "culturally embedded, value-laden activity". Hence, individuals view information systems from their own cultural perspective influenced by their cultural values, norms, and beliefs which also impact their reasoning to accept a technology (Alhirz and Sajeev 2015). Therefore, it is important

to study the role of cultural dimensions in the context of technology acceptance. In this study, the cultural theory being utilized is the Hofstede National Culture Theory. However, there are different cultural theories from past literature. The following discussion discusses the key cultural theories and why this study chose the Hofstede National Culture Theory as the guiding culture theory.

One of the key culture theories and is one of the most highly-cited theoretical frameworks in communication is the context theory of Hall (Hall 1976). In this theory, Hall identified fundamental differences in communication preferences, which he grouped into two categories. Cultural context is defined as the degree of sensitivity that an individual has towards communication contexts (Ma 2010). In the context theory of Hall, he stated that people are reliant on context to communicate and process information. Hence, the two categories are low context and high context cultures. The main difference between these two categories is the preference for words or contextual cues for communication. In a low context culture, verbal communication is the preferred method of communication where people highly rely on, words and us explicit and direct language to communicate. This method of communication is more prevalent in Western countries. In a low context culture, people are psychologically distant and require access to information to communicate with each other effectively. Meanwhile, people in a high context culture rely on contextual, implicit and indirect cues for communication. This method of communication is more evident in Eastern countries. In a high context culture, people have a deep mutual understanding of each other and information is conveyed through shared experiences, deep personal bonds and verbal cues (Harrell 2016).

Despite the popularity of this theory, Hall's classifications of culture have not been largely tested empirically (Hornikx and Le Pair 2017). In fact, only a limited number of studies have tested the central assumptions of the study (Van Mulken, Le Pair, and Forceville 2010). This differs greatly with Hofstede (1980), which was empirically tested on 400,000 IBM employees across 50 countries. Additionally, Abbasi et al. (2015) stated that the context theory of Hall is only suitable for technology acceptance studies when it involves a cross-cultural context. This further points to the suitability of the Hofstede's (1980) theory as it has the ability to measure culture at different levels, including at an individual level which is aligned to the objectives of this study.

Apart from the context theory of Hall, another culture theory which is also highly cited is the cultural dimensions theory by Trompenaars and Hampden-Turner (1998). This theory developed cultural dimensions to differentiate one culture from another in a business context (Woo and Hyung-Seok 2007). This theory categorizes culture into seven dimensions. The first five dimensions relate to relationship with other people. The five dimensions are universalism vs particularism, individualism vs communitarianism, neutral vs emotional, specific vs diffuse, and achievement vs ascription. Meanwhile, the two other dimensions involve orientation in time and attitude towards the environment. These two cultural dimensions are sequential time vs synchronous time, and internal direction vs external direction (Iosif and Vasilache 2013).

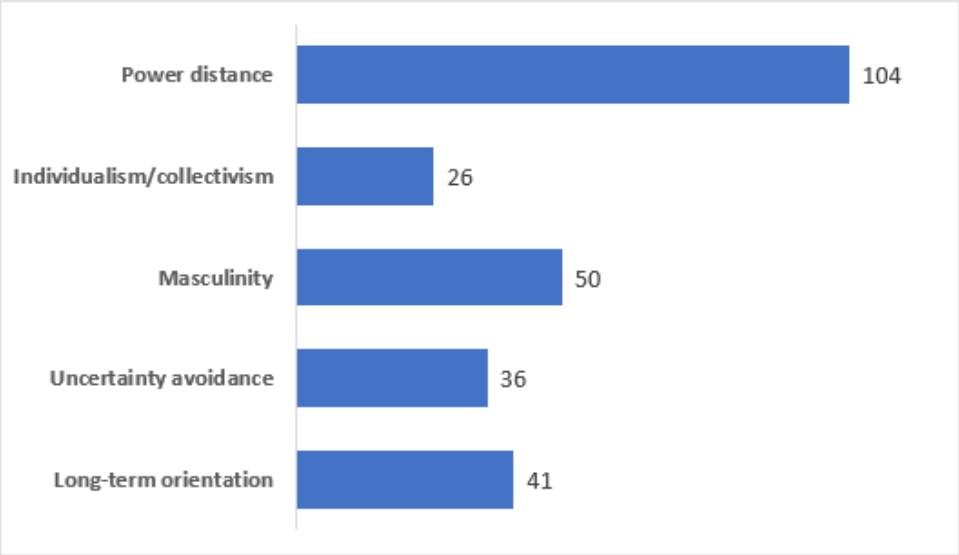
However, this theory was primarily developed to understand culture differences in business settings (Pagell, Katz, and Sheu 2005; Woo and Hyung-Seok 2007). Also, this theory experiences limitation because the unit of analysis is an entire society. Therefore, this assumption is flawed because it assumes that societies are homogenous entities. (Patel 2007). This assumes that everyone in the society has the same cultural dimensions which is inaccurate as individuals in the society can have different cultural dimensions.

In comparison to the Hofstede's (1980) model, the Hofstede model is capable of explaining differences at different levels such as professional, organizational and group level. Hofstede (1980) was among the first scholars to empirically demonstrate that despite the high penetration of global communications and interdependence between countries, distinctive cultural differences still exist among the countries. Hence, the Hofstede National Culture Theory is adopted as a supporting theory in this study's proposed framework because it has gained acceptance across different research contexts (Abbasi et al. 2015).

In the Hofstede National Culture Theory, Hofstede postulated that cultural differences can be assessed through several aspects of national culture (Belkhamza and Wafa 2009). The following figure shows the scores for Malaysia under each of the six dimensions of Hofstede National Culture Theory. Relevant to this study, two cultural dimensions under the Hofstede National Culture Theory, which are power distance,

and collectivism are selected to understand the behavioral intention to accept digital financial services among low-income households in Miri City, Sarawak.

Figure 2. 1 Cultural Dimensions Index Score



Source: Compiled from (Hofstede, Hofstede, and Minkov 2010)

According to Hofstede, Hofstede, and Minkov (2010) the scores for Malaysia's cultural dimensions of power distance was at 104, individualism/collectivism at 26, masculinity at 50, uncertainty avoidance at 36 and long term orientation at 41. Based on these values, power distance and collectivism were selected as they displayed the most interesting results compared to the other dimensions. The other dimensions had values close to 50, which made them less important in measuring behavioral intention (Hofstede 2014). This method of selection is consistent with Khan, Hameed, and Khan (2017) as they also selected cultural dimensions with extreme values. Additionally, these cultural dimensions were chosen because they represent established human values and general beliefs which align with the conceptual framework of this study (Lin 2014). The sixth dimension reported in the index score, which is indulgence versus restraint is a new dimension that has not been reported in any literature but it deserves more study (Hofstede, Hofstede, and Minkov 2010).

Initially, the Hofstede Theory was developed to make a cross-cultural comparison of IBM employees in 50 countries (Vijver and Fons 2016). From these findings, it was found that the five cultural dimensions differentiated the IBM employees from employees in other countries. Aligned with the objectives of this research to study the

technology acceptance of low-income households, Hofstede National Culture Theory also has the capacity to measure technology acceptance at an individual level. This is made possible due to the development of cultural dimensions scales which measures espoused individual technology acceptance (Srite and Karahanna 2006). In this study, the unit of analysis is a household. More specifically, the respondents for this study are the head of households. However, the justification for the use of the Hofstede National Culture Theory is based on an individual's perspective. In this instance, the term 'head of households' and 'individuals' are considered the same for this section because only an individual can answer the questionnaire. The term 'head of household' is just used to signify that the opinion of the individual answering the questionnaire is related to the overall opinion of the household. The validity of selecting head of households to represent the opinion of a household will be justified in the later section for sample inclusion criteria.

In the seminal work for the espoused national culture values at an individual level by Srite and Karahanna (2006), an individual's analysis of national culture is possible while also avoiding the ecological fallacy issue. Ecological fallacy is assuming that country-level correlations will remain valid even when substituted for individual correlations. In this study, the cultural dimensions scale was developed by the original authors from an individual's perspective. In fact, the criticism that culture cannot be reduced to an individual's perspective has been refuted by (Straub et al. 2002). According to the latter, the manifestation of culture originates from an individual. Only then, can culture be aggregated to the collective. Hence, it is clear that the impact of culture is heterogenous instead of homogenous. This can be attributed to the varying level that an individual subscribes to cultural values. Therefore, assessing culture from an individual's context is valid and can provide meaningful outcomes to predict technology acceptance.

Prior to the development of the scale, the Hofstede National Culture theory has been used on an individual level to investigate consumer's perception on negotiation behavior (Volkema 2004), package design (Limon, Kahle, and Orth 2009) and leadership (Shao and Webber 2006). However, Srite and Karahanna (2006) pointed out that the Hofstede metrics have been used inaccurately because individuals have been equally assigned with Hofstede indices to measure individual acceptance. The equal assignment of Hofstede indices is only acceptable in instances where the unit of

analysis is a country (Srite and Karahanna 2006). In comparison, Srite and Karahanna (2006) further posited that individuals relate to national cultural dimensions at varying degrees. Hence, for individual-level relationships, the individual cultural dimension scales allow the researcher to retain the original five dimensions of the Hofstede metric, with the original scale slightly modified to fit the individual's context. Aligned with this study, the espoused national cultural values scale developed by Srite and Karahanna (2006) is relevant to measure an individual's cultural values of low-income households in Miri, Sarawak. Moreover, the use of the Srite and Karahanna's (2006) scale is consistent with Yoon (2009) which investigated the moderating impact of Hofstede national cultural dimensions on the technology acceptance of e-commerce. This study utilized the scale only for university students in China which are believed to be of the same nationality instead of different cultures.

More importantly, this study diverges from the usual approach of many studies using the Hofstede National Culture which typically use the cross-cultural approach. In cross-cultural studies, the respondents comprise of individuals from different countries. In comparison, this study only investigates respondents which are only from one nationality, which is Malaysia. This approach is consistent with several other studies conducted in Malaysia that have utilized the Hofstede National Culture Theory to study the impact of culture only on Malaysians (Valaei et al. 2016; Mahomed, McGrath, and Yuh 2017; Thien, Thurasamy, and Razak 2014). The divergence from the usual approach to study the impact of culture is supported by Minkov and Hofstede (2012) empirical study which found that Malaysia does not have a completely homogenous national culture. Hence, this implies that there are intranational differences within the Malaysian society that can be as significant as cross-cultural differences (Tung 2008).

The discourse about the lack of meaningfulness of the use of national as a unit of analysis is echoed by other scholars such as McSweeney (2002) and Baskerville (2003). An important argument against the use of nations as a unit of analysis is the fact that nations have regional, ethnic and subcultures which are also known as intranational subcultures (Peterson and Smith 2008). In nations, there are subcultures that can be considered distinct from one another. Furthermore, the use of nations as a unit of analysis is often based on arbitrary political formations that are not based on stable cultural lines (Minkov and Hofstede 2012). The empirical findings from the

Minkov and Hofstede's (2012) study found that Malaysia is not a completely homogenous national culture. Given these arguments, it is justified for this study to use the Hofstede National Culture Theory from an individual and intranational context in Miri, Sarawak.

The following section explains the two cultural dimensions chosen for this study which are power distance and collectivism.

a) Power Distance

The first cultural dimension, power distance is defined as the extent to which individuals within the nation believe that power inequality is a norm (Hofstede 2011; Johns, Murphy Smith, and Strand 2003). The construct of power distance is relevant to the acceptance of digital financial services because of the equalizing nature of the technology (Alshare et al. 2011). In high power distance societies, members of the society believe that the unequal distribution of power is normal. Hierarchies and emphasis on positions are common. In low power distance societies, members of the society seek for equal power distribution. In the case where power inequality occurs, society demands a justification (Hofstede 2011; Hofstede Insights 2019). In relation to this study, power distance is hypothesized to moderate the relationship between financial literacy and behavioral intention to accept digital financial services.

To understand the moderating role of power distance, it is important to understand how this construct affects the use of knowledge as this relates to the use of financial literacy knowledge among low-income households. The measure of financial literacy pertains several criteria such as knowledge of risk diversification, inflation and interest rate which are primarily developed through personal knowledge and experience (Grohmann, Klühs, and Menkhoff 2018).

In societies with high power distance, the moderating role of power distance on financial literacy and the behavioral intention to accept digital financial services is positive. Malaysia has the highest level of power distance in the world, with a Power Distance Index (PDI) of 104 out of 120. This data was obtained from the IBM Database in which the PDI for Malaysia was compared with 76 other countries in the world. Other countries in the world had PDI index which ranged from 11 to 95 (Hofstede,

Hofstede, and Minkov 2010). In the society today, studies have strongly shown that the level of financial literacy among low-income households is very low (Huston 2010). Given this situation, it is arguable that authoritative figures need to step in to ensure that low-income households are engaged to take up digital financial services to improve the quality of their life. Hence, individuals with high power distance values are often subjected to strong control mechanisms that dictate their knowledge sharing and exchange (Shane 1995). Under the premise of high-power distance, authoritative figures such as the government and banks should engage with low-income households to take up digital financial services.

Aligned with this, it means that low-income households in Malaysia with high power distance engage in the use of financial literacy in an effective manner as they are prompted by authoritative figures to do so. In other words, low-income households are obliged to follow instructions to show respect to the superiors (Ansari, Ahmad, and Aafaqi 2004). Additionally, past studies have also shown that people from high power distance societies are more likely to form a positive attitude towards the use of a technology regardless of the positive or negative attributes of the technology (McCoy, Galletta, and King 2007). This finding is resonated by Al-Gahtani, Hubona, and Wang (2007), which found that societies with high power distance and collectivism has a higher intention to use information technology (IT).

However, there are opposing views in literature regarding the moderating role of power distance. For instance, Mutlu and Ergeneli (2012) empirically showed that power distance does not moderate technology acceptance in the context of email usage. Similarly, Udo and Bagchi (2011) also found that power distance does not play a moderating role between ease of use and user satisfaction as well as information system quality and user satisfaction, in the acceptance of online services. Furthermore, Goularte and Zilber (2019) concluded that power distance does not play a moderating role in the acceptance of mobile banking. Similarly, Alshare et al. (2011) found that power distance does not moderate the relationship between perceived usesfulness and attitude towards computers. Considering these literatures, this study hypothesizes that the high-power distance among low-income households in Miri, Sarawak causes them to utilize their financial literacy in an effective manner to accept digital financial services.

H6: Power Distance (PD) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services.

b) Collectivism

Collectivist societies are expected to look after their extended families, which reciprocate loyalty in return for their care (Hofstede 2011; Hofstede Insights 2019). In relation to this study, collectivism is hypothesized to positively moderate the relationship between financial literacy and behavioral intention to accept digital financial services.

To understand the moderating role of collectivism, it is vital to consider how collectivism affects the use of knowledge. This is because the use of knowledge relates to financial literacy as it impacts how low-income households use their knowledge to accept digital financial services.

In a collectivist society such as Malaysia, there is a great emphasis on close group relationships interdependence, cooperation and teamwork (Chen, Xiao-Ping, and Meindl 1998; Yoon 2009). In relation to the use of knowledge, this creates an atmosphere that encourages cooperation which leads to a greater likelihood to create and exchange knowledge (Nahapiet and Ghoshal 1998). Additionally, a collectivist society also encourages individuals to disclose their knowledge and use them creatively (Wagner III 1995).

In literature, there are also opposing views on the moderating roles of collectivism for technology acceptance. For instance, Tarhini et al. (2017) found that collectivism does not play a moderating role between perceived use and behavioral intention as well as perceived ease of use and behavioral intention, in the context of e-learning acceptance. In another study by Ganguly et al. (2010), findings indicated that collectivism negatively moderates the relationship between trust and purchase intention in an online store.

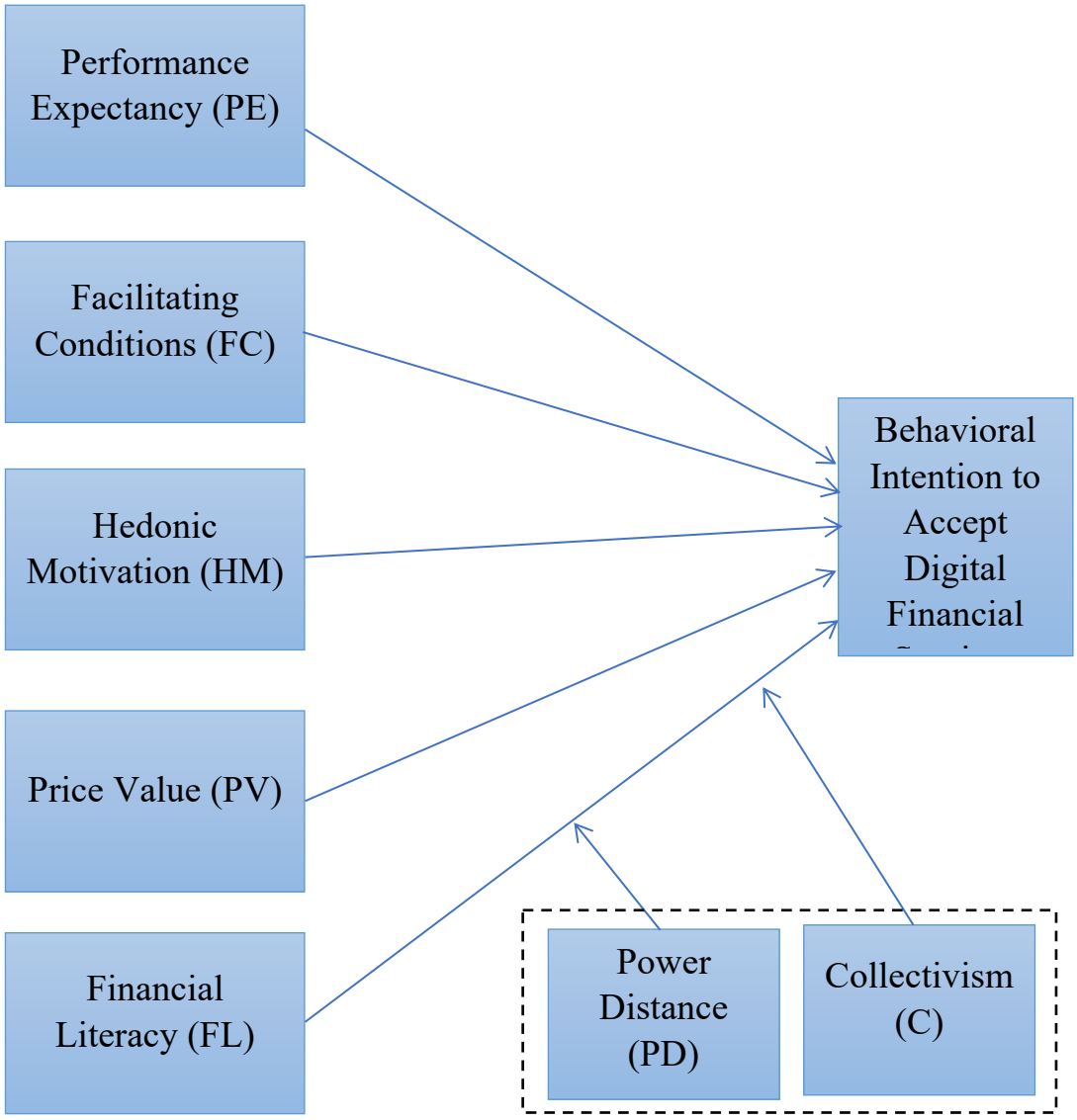
Considering these literatures, this study hypothesizes that individuals with collectivist values are more likely to utilize their financial literacy knowledge as they are encouraged to exchange and use them effectively.

Hence, this study stipulates:

H7: Collectivism (C) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

2.6 Conceptual Framework

Figure 2. 2 Conceptual Framework



(Hofstede 1980)

Figure 2.1 illustrates the conceptual framework which is utilized for this study. The proposed conceptual framework retains 4 original determinants from the UTAUT2 model which are performance expectancy, facilitating conditions, hedonic motivation and financial literacy. Based on past literature, a new determinant which is financial literacy is added to the conceptual framework. Drawing from the Hofstede National Culture Theory, the cultural dimensions of power distance and collectivism were hypothesized to moderate only financial literacy. The reason for this is because this study seeks to focus on the new determinant added in the framework, which is financial literacy as it is a contribution of the study. This determinant addresses a gap in previous technology acceptance studies as no study has used financial literacy as a determinant. Similarly, there has been another study by Al-Okaily et al. (2020) that proposed the use of a cultural moderator to moderate only one direct relationship in the theoretical framework. Therefore, the moderation of two cultural dimensions contributes to the body of knowledge because this moderating relationship has never been analyzed before. Hence, this study seeks to understand the relationship between the determinants, moderating variables and the behavioral intention to accept digital financial services.

2.7 Literature Gap

From a thorough analysis of past researches on the study of technology acceptance and the UTAUT2 theory, there are many areas of research that are yet to be explored. As the UTAUT2 is fairly new, established only in 2012, the conceptual framework still lacks generalizability as the original framework was biased towards a sample age, location, and technology. The original authors, Venkatesh, Thong, and Xu (2012) stated that future researches on UTAUT2 should be tested in different countries, age groups, and technologies. More importantly, they also stated that identifying other relevant determinants can improve the applicability of the framework to other consumer technologies.

The first literature gap which has been identified is the lack of studies which utilize financial literacy as a determinant for behavioral intention with respect to digital finance. From past studies, additional determinants which have been added to the

UTAUT2 theory are gamification (Baptista and Oliveira 2017), trust (Alalwan, Dwivedi, and Rana 2017), government support (Sánchez-Torres et al. 2018), brand name (Mahfuz, Khanam, and Hu 2017), perceived service quality (Yaseen and El Qirem 2018), self-efficacy, security (Singh and Srivastava 2018), perceived risk (Alkhaldi 2020), promotional support (Madan and Yadav 2016) and network externalities (Qasim and Abu-Shanab 2016). To the best of our knowledge, there are no UTAUT2 studies relating to digital finance that used financial literacy as a determinant. For digital finance technologies to be used optimally, Bongomin et al. (2017) stated that financial literacy is key towards helping individuals evaluate and use technologies which are relevant to their needs.

Secondly, there is a lack of studies using the UTAUT2 theory to investigate technology acceptance. The UTAUT2 theory, is one of the most comprehensive and parsimonious theory to explain technology acceptance as it synthesizes all the constructs from past technology acceptance theories (Venkatesh, Thong, and Xu 2012). Despite this, there are still recent digital finance studies that use outdated theories to explain technology acceptance. For instance, there are still studies that use the UTAUT theory to explain mobile banking (Alkhaldi 2020; Sarfaraz 2017), debit cards (Kissi, Oluwatobiloba, and Berko 2017) and internet banking (Wang, Cho, and Denton 2017). Additionally, there are also digital finance studies that use the technology acceptance model (TAM) to explain internet banking (Patel and Patel 2018; Sharma, Govindaluri, and Al Balushi 2015), mobile banking (Koenaite, Chuchu, and Villiers 2019) and mobile banking applications (Muñoz-Leiva, Climent-Climent, and Liébana-Cabanillas 2017). The use of the UTAUT2 model in this study is highly suitable as it has been proven to show substantial improvement in the variance through behavioral intention (Alazzam et al. 2016).

Thirdly, there is a lack of technology acceptance studies which attempt to link digital financial services to low-income households. The lack of past technology acceptance studies for low-income households is evident on a global scale and studies on this population are non-existent in Malaysia. Most of the past literature relates technology acceptance to a common subpopulation which already has primarily utilized the technology. From research, the population of interest in UTAUT2 studies pertaining digital finance often comprises of bank customers (Alalwan, Dwivedi, and Rana 2017; Salim, Mahmoud, and Khair 2016), suburban residents (Gharaibeh and Arshad 2018),

and university students (Khan, Hameed, and Khan 2017). Additionally, there are a few UTAUT2 studies analyzing low-income households (Khan, Hameed, and Khan 2017; Goularte and Zilber 2019). Clearly, the population of interest in UTAUT2 studies has not adequately explored technology acceptance among low-income households although the literature has repeatedly reaffirmed the potential of digital financial services in transforming the lives of this vulnerable population. Hence, this research seeks to fill an important gap in research which is understanding the determinants that impact technology acceptance among low-income households.

Lastly, there is a lack of study analyzing the moderating role of cultural dimensions on technology acceptance. Drawing from suggestions by Venkatesh, Thong, and Xu (2012), they encourage the application of the UTAUT2 model in new cultural contexts. In this regard, Park, Yang, and Lehto (2007) stated that the role of culture as a moderating construct must be analyzed for technology acceptance studies. However, very few studies have attempted to introduce culture as a determinant or moderating construct in the UTAUT2 conceptual framework. This is a shortcoming of the UTAUT2 framework as it does not directly assess the impact of culture on technology acceptance. The few studies selected that have utilized cultural moderators in the UTAUT2 study is Khan, Hameed, and Khan (2017) that applied the Hofstede Culture Theory, with the individualism/collectivism construct and uncertainty avoidance in Pakistan. To the best of our knowledge, there are no UTAUT2 studies on low-income households that have introduced cultural dimensions as a moderating construct.

There are very few studies that have attempted to study technology acceptance among low-income households, an important subpopulation which past literature has proven to be disadvantaged economically and socially. This study lays the groundwork to provide vital data to different stakeholders on how to better help low-income households.

2.8 Summary

Chapter 2 provides an extensive literature review on the hypothesis development of this study. This chapter largely details the hypothesis development based on two of the main theories used in this study which are UTAUT2 and Hofstede National Culture theory. Past literature on digital financial services in the context of low-income households was also reviewed in this chapter. The new determinant proposed in the study's conceptual framework which is financial literacy is also supported through literature review to provide a better understanding on the role of this construct in the proposed framework. Consequently, the thorough literature review leads to the formation of a conceptual framework which incorporates the two main theories. From the extensive literature review, this chapter ends with key literature gap that this study aims to address.

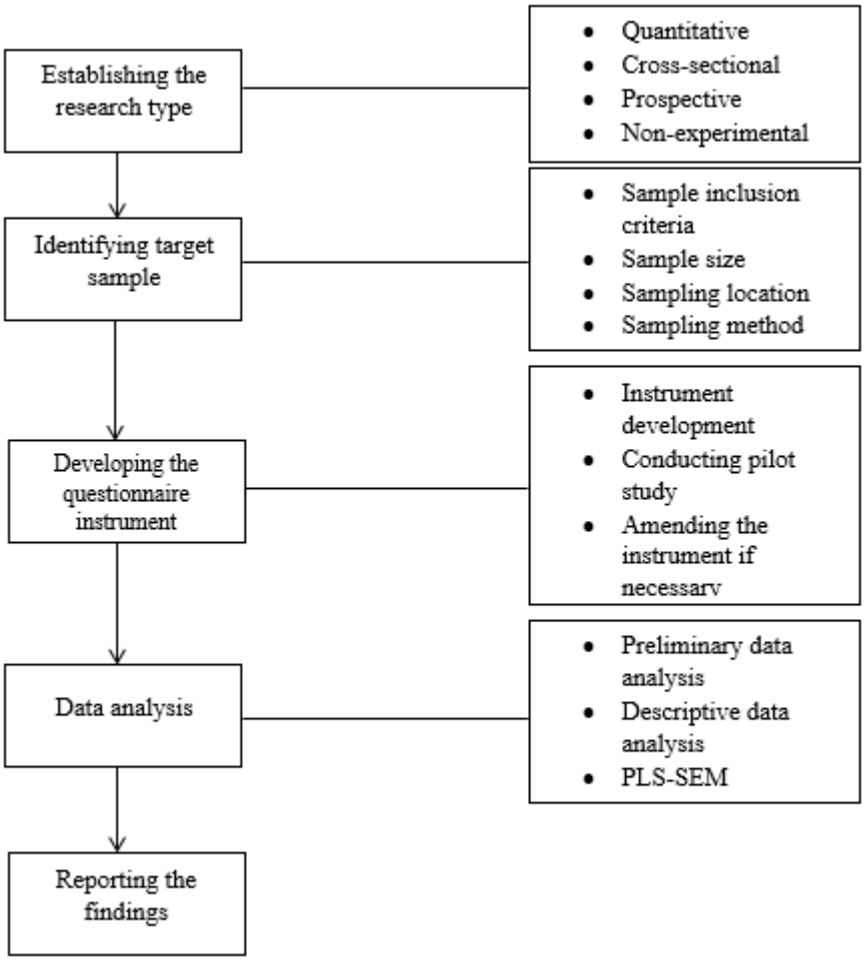
CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides an overview on the methodology of this study. Hence, the sections of this chapter are: purpose of study, research type, research design, data analysis, ethical considerations and summary.

In conducting this study, the researcher adhered to the research methodology process shown in Figure 1. The first step in the research methodology was determining the research type. This study is defined as a quantitative, cross-sectional, prospective and non-experimental study. Next, the sampling frame was established. In this step the sample inclusion criteria, size, location and method were determined. Consequently, the researcher then developed the questionnaire instrument. The instrument was developed through previously validated instruments. For the determinant of financial literacy, the scales were developed from an established financial literacy scale, but slight modifications were made to the scale to fit the context of the study. Consequently, a pilot study was conducted to reduce ambiguity and improve the quality of the instrument. From there, amendments were made to the questionnaire if necessary, based on the statistical results of the pilot study and feedback of the pilot study respondents. The total number of low-income households in Miri City is 3,244 households. Next, the questionnaire was deployed to the target sample of 343 respondents. Then, data analysis was done using SPSS and PLS-SEM. Finally, the findings of the study were reported. Figure 3 summarizes the steps in the study research methodology.

Figure 3. 1 Steps in Research Methodology



3.2 Purpose of The Study

The purpose of this study is to identify the determinants of the behavioral intention to accept digital financial services among low-income households in Miri, Sarawak. Specifically, the determinants which are investigated in this study are performance expectancy (PE), facilitating conditions (FC), hedonic motivation (HM), price value (PV), and financial literacy (FL). Furthermore, this study also seeks to investigate the moderating role of cultural dimensions between financial literacy and the behavioral intention to accept digital financial services among low-income households in Miri, Sarawak. In this chapter, it details the research methodology. The first aspect is research type.

3.3 Research Type

This study is a quantitative study (Bâlici 2018). According to Zyphur and Pierides (2017), quantitative studies are often related to three main elements which are sampling, measuring and methods for casual inference. Quantitative studies are known for its specificity, well-defined structure, explicit definition and can be tested for validity as well as reliability (Kumar 2011). In relation to this study, past studies using the UTAUT2 model have used the quantitative method to investigate the behavioral intention to adopt digital finance (Alalwan, Dwivedi, and Rana 2017; Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Khan, Hameed, and Khan 2017). Furthermore, quantitative studies can be further classified by examining these three perspectives which are the number of contacts with the study population, the reference period of the study and the nature of the investigation (Kumar 2011).

With regards to the number of contacts with the study population, this study only made contact once with the study population. Hence, it is a cross-sectional study. Levin (2006) stated that a cross-sectional study is often conducted to investigate a problem, situation or issue at any given time point. Aligned with this research, the study sample was identified and approached only once to understand the determinants of DFS acceptance and the moderating role of individual differences, as well as cultural dimensions. Next, the reference period in this study was prospective. The use of the prospective study design relates to the likelihood of a phenomenon, situation or problem happening in the future (Kumar 2011). A key factor to this study being prospective is that it seeks to study the behavioral intention, which the original author, Venkatesh et al. (2003) defined as the intention to use a system in a set number of months, in the future. Hence, a cross-sectional study is considered sufficient for this study due to the time and resource constraints the researcher faced.

Lastly, the nature of the investigation in this study is non-experimental. According to Kerlinger (1986), a non-experimental research is a systematic empirical inquiry, in which the independent variables or predictor variables cannot be directly controlled by the researcher. The inability to manipulate the variables stems from the fact that the manifestations of the variables have already occurred, or it is inherently impossible to control. This is especially true for social scientific problems that do not lend

themselves to experimentation. In relation to this study, the determinants for the behavioral intention to accept DFS seeks to investigate deeply rooted social norms and financial institution support which are not feasible for manipulation. Instead of manipulating the independent variables, Reio (2016) stated that non-experimental studies focus on finding linkages or associations between variables. Additionally, Thompson and Panacek (2007) posited that cross-sectional studies are among the common non-experimental designs used. However, non-experimental studies are most prone to bias which means that precautions must be taken to limit potential bias. Therefore, this study has a cross-sectional, prospective and non-experimental design.

3.4 Research Design

A research design is a plan, structure, and strategy that a researcher adopts to answer their research questions in a valid, objective, accurate and economical manner (Kerlinger 1986; Kumar 2011). It is a detailed blueprint on how the researcher plans to complete the research. Hence, the following sections include details on population, sample, data collection and data analysis.

3.5 Sample Inclusion Criteria

According to Asiamah, Mensah, and Oteng-Abayie (2017), a general population does not contain specific attributes that reflects a research hypothesis, context or goals. Hence, a refinement of the general population is necessary to obtain a target sample. In comparison to the general population, a target sample is defined as a group of people which are drawn through inclusion criteria that reflect the study hypothesis, context and goals. Consequently, the target population are low-income households in Miri City, a region under the Miri Administrative District located in Sarawak. The target population is also obtained through a set of inclusion criteria.

In this study, only the head of household is permitted to complete the survey to avoid multiple members in a household participating in the study. Studies have shown that head of households are representative of the overall well-being of their household

instead of their own individual satisfaction (Bookwalter, Fuller, and Dalenberg 2006). A study conducted on urban households in Malaysia found that the head of households are often people who are the main income earner in the family (Yusof, Rokis, and Jusoh 2015). In a separate study by Posel (2001), the author posited that head of households are not defined by an objective criteria but is often self-identified by the respondents. To guide the discussion on head of households in this study, it considers the definition of head of households from IRS (2019) which stated that the head of household can be defined as an individual who is married or unmarried, employed with income from labor or self-employment and pays for more than 50% of the costs of maintaining a home for him or herself and other dependents (IRS 2019).

Hence, the inclusion criteria for this study are individuals of age 18 years old or older, married or unmarried, main income earner in the family, employed with income from labor or self-employment, lives in Miri City and has a household income from RM1,070 to RM3,459 per month. In this study, individuals below the age of 18 are not considered. Under the Malaysian law, the Age of Majority Act 1971 stated that adults are those aged 18 years old and above (Attorney General Chamber 1971). Therefore, individuals below 18 are considered minors and do not have the legal capacity to make decisions that determine the welfare of a household. The exclusion of minors from this study also ensures the reliability and validity of the data collected.

3.6 Sample Size

The selection of the sample size in quantitative studies has been thoroughly discussed in past literature. However, selecting the correct sample size is still a challenge for many researchers (Hair 2007). More importantly, it is vital for researchers to carefully consider their sample size. This is because statistical techniques such as structural equation modelling are greatly affected by sample size (Hair 2007; Collis and Hussey 2013). For instance, Krejcie and Morgan (1970) stated that the optimal sample size for a total population of 1 million and above is 384. In comparison, Hair (2007) suggested a sample size of 200 for researchers using structural equation modelling. In light of these differing suggestions, this study uses the Krejcie and Morgan (1970) table to

determine the sample size. The following details how this study deduced the estimated population size.

The state of Sarawak is the largest state in Malaysia. It spans across 124,450km^2. In 2016, DOSM (2017b) reported that the Sarawak state has a total of 603,600 households. The state is divided into 12 divisions, 40 districts, and 26 sub-districts. In the Miri district, there is a total of 77,864 households (DOSM 2017b). According to DOSM (2017), the percentage of low-income households in the Miri District is 8%. As the number of B40 households in Miri City is unknown, an estimated number is deduced through the percentage of B40 households in Miri District. The total number of households in Miri City is 40,552 households (DOSM 2010). As the number of B40 households in Miri City is unknown, an estimated number is deduced through percentage of B40 households in Miri District, which is 8%. In this study, B40 is a classification given by the Malaysian government for low-income households. According to DOSM (2017a), B40 households in Miri District is defined as households with a total household income of below RM3,459. Additionally, this study also excludes those living in poverty. Therefore, the national poverty income line is also taken into consideration to determine the total household income. Hence, B40 households in this study refer to those with household income from RM1,070 to RM3,459.

In reference to the sample size, from 8.0% of 40,552 households in Miri City, there is a total of 3,244 B40 households in Miri City. Next, the total number of samples is drawn from this figure. In research, it is impractical and unimportant to approach every single person that fits a research design (Mangal 2002). Instead, a sample is drawn from the population. As the number of B40 households in Miri City is 3,244, Krejcie and Morgan (1970) stated that 343 households is the optimal sample size.

Calculation:

Number of households in Miri City: 40,552 households

Percentage of low-income households in Miri District: 8.0%

Estimated number of low-income households in Miri City: 8.0% x 40,552 households = 3,244 households

Number of samples obtained from Krejcie and Morgan (1970) table: 343 households

Moreover, past technology acceptance studies in Malaysia have sample sizes from between 120 to 666. For instance, the following Malaysian studies sample size are 120 (Ahmed and Phin 2016), 666 (Yuen, Yeow, and Lim 2015), 105 (Goh and Sun 2014), 114 (Arshad, Mat, and Ibrahim 2018), 638 (Chin and Ahmad 2015), 389 (Krishanan et al. 2016), 183 (Low et al. 2017) and 239 (Yu, Balaji, and Khong 2015). The average sample size for these studies is around 300. Therefore, the selection of 343 households as a sample size for this study is reasonable. Based on the suggestion given by Krejcie and Morgan (1970), the confidence interval is set at 95% with a 5% margin of error.

3.7 Sampling Location

The sampling location of interest in this study is Miri, Sarawak. There are a few key reasons that Miri, Sarawak was chosen for this study. First and foremost, Miri has a good representation of low-income households in Sarawak. The Miri District has the third highest level of low-income households in Sarawak (DOSM 2017b). The percentage of low-income households in Miri is at 8% compared to other districts which have about 1-2% low-income households on average. This aligns with the interest of the study to target low-income households which are both users and non-users of digital financial services. Additionally, data collected from the Miri District yield valuable insights because it also has a high percentage of high-income households, with 16.8% of its population being high-income households.

Secondly, the selection of Miri, Sarawak aligns with the interest of the state government to drive the digital economy within the state. This is evident through the release of the recent Sarawak Digital Economy Strategy 2018-2022. This state-level strategy outlines the plans for the developments of digital economy in the next five years. More importantly, this strategy penetrates through multiple industries. As this study focuses on bank-led digital financial services, there are many industries outlined in the strategy which are relevant to the technology being investigated. For instance, the industries in the strategy which are relevant are e-commerce, cyber security, digital government, and digital infrastructure. The strategy is also relevant to low-income households because it seeks to use knowledge, innovation and digital technology to reduce the widening socio-economic gap in Sarawak (Sarawak Biodiversity Centre

2018). As digital financial services are a key tool towards personal financial management, findings from this study can provide valuable insights to the government on how to improve the level of accessibility to this vulnerable group.

Thirdly, there is enough broadband coverage within Miri to understand the acceptance of digital financial services among low-income households. This is evident through the 78% broadband coverage for 3G connection within Sarawak. In 2018, the Chief Minister of Sarawak announced a RM1 billion investment for the provision of digital infrastructure within the state (Borneo Post 2018a). Additionally, Maxis Sendirian Berhad, a major telecommunication company in Malaysia stated that the mobile data usage in Sarawak is one the highest in the country (Borneo Post 2018b). However, the high level of mobile data usage points to the lack of fixed internet penetration within the state. Given this fact, this provides a great opportunity for this study to understand the determinants which impact the adoption of digital financial services.

Therefore, the selection of sample from Miri, Sarawak is justified to study the behavioral intention to adopt digital financial services among low-income households.

To conduct the study, the researcher prepared paper-based questionnaires which were distributed to common areas where there are a high number of people. This includes areas such as open-air markets and public community areas such as public parks. Additionally, the selection of these areas also provides a good representation of the demographic variables as the researcher is able to approach low-income households from different age groups, ethnicity and backgrounds. This increases the likelihood of the data being representative of the target population.

3.8 Sampling Method

According to Kumar (2011), there are two types of sampling methods which are probability sampling and non-probability sampling. In probability sampling, all the samples have an equal and independent chance of being chosen. This means that the selection of these samples is not affected by other factors such as personal preference. To ensure a fair selection of sample in probability sampling, a sampling frame must be available to the researcher. Some of the common types of probability sampling are simple random sampling, stratified random sampling and cluster sampling.

Meanwhile, non-probability sampling is used when a sampling frame is not available to the researcher. In other words, the total population is either not known or the individuals cannot be individually identified. Therefore, the selection of sample under non-probability sampling utilizes other considerations such as referrals and personal preference. Examples of non-probability sampling types are quota sampling, accidental sampling, purposive sampling, expert sampling and snowball sampling.

In this study, the sampling frame for low-income households for Miri City is not available. In the event where there is no sampling frame or when the elements in the population cannot be individually identified, Kumar (2011) stated that non-probability sampling designs must be utilized. Hence, this study utilizes purposive sampling and snowball sampling. According to Valerio et al. (2016), purposive sampling is a non-probability sampling method that relies on the judgment of the researcher to select the respondents for the study based on who they think may fit the inclusion criteria. In fact, purposive sampling is also known as judgmental, selective or subjective sampling. The selection of purposive sampling is highly useful as this study has specific inclusion criteria which may cause high numbers of unusable responses if other methods of sampling are used. In fact, the use of purposive sampling is common to reach hard-to-find target samples.

Purposive sampling was first used to initiate the data collection process. To conduct purposive sampling, the researcher approached friends and peers which she believes fit the inclusion criteria of the study. All potential respondents were briefed about the title of the research and the inclusion criteria for respondents. Consequently, potential respondents were also informed that their participation is completely voluntary and

anonymous. Then, potential respondents were given the questionnaire where they can mark the box which indicates their consent.

There are several advantages of using purposive sampling. It enables the researcher to identify a sampling frame based on the inclusion criteria set (Valerio et al. 2016). Other advantages of deploying purposive sampling are the low cost it incurs, high number of response rates and faster data collection. These advantages are possible as purposive sampling enables the researcher to target specific and predefined individuals as the study sample (Pettus-Davis et al. 2011).

Meanwhile, the second sampling method in this study which is snowball sampling is defined as a method of recruiting study respondents by using networks or referrals (Kumar 2011). The researcher of this study recruited initial respondents using purposive sampling and then asked for the initial respondents to identify other target respondents based on their knowledge. This process increased the number of study respondents especially as this study has strict inclusion criteria. According to Valerio et al. (2016), the use of snowball sampling can increase the credibility of a research as the recruitment of the respondents are based on networks and relationships of the participants. Despite this, this method of sampling has also been criticized as it often results in the lack of respondents' diversity as the referral may only result in respondents sharing similar characteristics. Additionally, one of the limitations of this study is that it may take up more time as it requires the collaboration of others to identify potential participants that matc the inclusion criteria.

Following the purposive sampling which was done to initiate data collection, the researcher then proceeded to conduct snowball sampling. This was done by obtaining recommendations from the respondents who were recruited through purposive sampling. These initial respondents referred the researcher to other respondents who they believe fit the inclusion criteria of the study. Hence, the researcher met up with the referred respondents to obtain their responses. By utilizing the purposive and snowball sampling method, the researcher was able to obtain sufficient responses which resulted in 343 valid responses.

Given these arguments, the use of purposive and snowball sampling is justified as this study is highly specific in the selection of respondents as evident in the inclusion criteria. The use of purposive sampling is also appropriate for studies that aim to

develop hypotheses instead of generalization of a large population (Saranya 2014). The use of purposive sampling has been utilized by Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo (2015) which also investigated the digital financial services among the elderly.

The questionnaires were distributed over the course of 7 weeks. The period of data collection was from 22 December 2019 to 6 January 2020. The researcher distributed approximately 380 questionnaires to the respondents. This is to make up for unavoidable sampling errors such as unusable responses, non-response and insufficient response. During the process of data collection, the researcher reassured respondents that their participation is completely voluntary and confidential. This means that individuals being approached have a right to choose not to answer. Privacy concerns were also addressed when approaching respondents as the researcher stated that data collected is non-identifiable to any individual. Participants were given the opportunity to read the participants information sheet and proceed to tick a box implying consent at the beginning of the questionnaire. The process of answering the questionnaire took approximately 10 minutes and the questionnaires was returned to the researcher on the spot. The researcher also answered any questions or concerns that respondents have about the questionnaire.

3.9 Questionnaire Instrument

There are two types of data sources available during data collection which are primary and secondary sources. The use of primary sources relates to gathering information through observation, interview and questionnaire. Meanwhile, secondary sources relate to the use of documents to collect data. Examples of these documents are government publications, census, client histories and service records (Kumar 2011). It is important to note that there are no data sources which provide 100% accurate data.

To assist with data collection, paper-based questionnaires were utilized by the researcher. A questionnaire is a written list of questions or statements prepared by the researcher. A questionnaire is commonly used when the researcher wants to profile the sample in terms of frequency for elements such as opinions, beliefs, behaviors or experience (Rowley 2014).

The use of a questionnaire as a method of data collection in this study is also supported by Pinsonneault and Kraemer (1993) which stated that there are three main instances where this tool should be utilized. Firstly, a survey is suitable when the study utilizes a quantitative method. Secondly, questionnaire instruments must be pre-defined from an established conceptual framework. Lastly, the research must study a sample from a target population. Given these arguments, the use of a questionnaire is justified for this study.

3.9.1 Questionnaire Design

According to Zikmund (2000), the content of a questionnaire should be simple and easy for the respondents to understand. A questionnaire should have brief contents and have positive questions (Ghani et al. 2017). All of these are done to ensure that respondents complete a questionnaire with ease (Rahi, Ghani, and Muhamad 2017; Rowley 2014). Additionally, the questionnaire's wording should be easy and simple as well. Formatting of the questionnaire also matters to reduce respondent's bias and measurement error (Rahi and Ghani 2017). The language of the questionnaire should also be made in a language that is most understandable to the respondents.

Although English is the main language utilized by banks in Malaysia and used as the main language on their websites and applications, this study uses Bahasa Malaysia, which is the national language of the country. This is done in consideration of the target respondents which are from low-income households. It is highly likely that this subpopulation does not have high levels of literacy and are not proficient in understanding English. Therefore, the questionnaires were translated to Malaysia's national language, Bahasa Malaysia prior to distribution.

The questionnaire is seven pages long and may take approximately 10 minutes to complete. It is divided into four main sections. It contains 44 items which are utilized to investigate the independent, dependent and moderating variables in the study. Prior to answer the questionnaire, a participant information sheet was provided which details the title of the research, the investigators, and their participation in the research. More importantly, respondents were reassured that their participation in the project is completely voluntary and details they provide are only strictly used for academic

purposes only. Participants were also provided with contact information if they have any questions or concerns about the questionnaire.

There are four main sections in the questionnaire. Section A contains 5 questions about the demographic profile of the participants. Section B asks 3 questions about the digital financial services experience of the respondents. Section C investigates the determinants of the behavioral intention to adopt digital financial services. In this section, all the independent variables and dependent variables were measured. The variables being investigated are performance expectancy, facilitating conditions, hedonic motivation, price value, financial literacy and behavioral intention. Lastly, section D investigates the cultural dimensions of the respondents. This section investigates the moderating variables which are power distance and collectivism.

3.10 Pilot Test

A pilot study is a small-scale experiment which is undertaken prior to launching a full-scale project (Eldridge et al. 2016). In other words, a pilot study is conducted with a subset of the target sample size. In fact, Fraser et al. (2018) viewed pilot studies as a strategy that researchers utilize to reduce the risk of failing the full-scale project. More specifically, pilot studies enable researchers to test the feasibility of their study designs, instruments, procedures, inclusion criteria and operational strategies which are planned for deployment in the full-scale study (Moore et al. 2011). From the findings of pilot studies, researchers can address possible issues that may arise prior to the full-scale study. Despite arguments that pilot study adds to the amount of work required for the researcher, the benefits obtained from the execution of a pilot study increases the success rate for a full-scale study (Cope 2015).

From pilot studies, researchers can use the findings to make amendments to different elements of the study. For instance, the researcher can refine the data collection recruitment process, inclusion criteria, improve questionnaire formatting, change particular wordings in a questionnaire and obtain direct feedback for the questionnaire from participants of the study (Beebe 2007). The findings of the pilot study can also be key towards understanding possible ethical and practical issues that may arise during the execution of the full-scale study (Doody and Doody 2015). Moreover, there

are numerous literature support that has shown that other digital finance acceptance studies also conducted a pilot study prior to the full-scale study (Arshad, Mat, and Ibrahim 2018; Baptista and Oliveira 2017; Martins, Oliveira, and Popovič 2014; Yuen, Yeow, and Lim 2015).

Based on the recommendation of previous literature, this study conducted a pilot study with 25 participants. The selection of the number of people for this pilot study is in line with Malhotra (2007) which stated that 15 to 30 people are recommended for a pilot study. In fact, the selection of the sample size for a pilot study should be sufficient to account for the variation in the actual study that the researcher believes to affect the responses (Saunders, Lewis, and Thornhill 2016). The respondents for the pilot study were selected based on the inclusion criteria of the study for low-income households. Then, the findings of the pilot study are used to conduct assess reliability of the questionnaire.

According to Pallant (2013), reliability is the aspect of the instrument which measures whether the scale is measuring the same underlying construct. The software used to run this test is the SmartPLS 3.0 software. This software was chosen to measure the reliability because the construct of financial literacy was developed from an established scale, but several modifications were made to the scale, based on literature support to add several statements that more comprehensively reflect the elements of financial literacy. As the established scale has been modified, measuring only Cronbach alpha through the Statistical Package for the Social Sciences (SPSS) tool will yield inaccurate results. In comparison, the use of the SmartPLS is suitable for this pilot study because it can accommodate small sample sizes and suits exploratory studies (Ramayah et al. 2018). Table 3.1 summarizes the findings for the reliability of the instrument.

Table 3. 1 Pilot Study Results for Reflective Measures

		Loadings	Average Variance Extracted	Composite Reliability
Threshold Value		**> 0.40**	**> 0.50**	**0.7 - 0.9**
Constructs	**Items**			
Behavioral Intention to Accept Digital Financial Services (BI)	BI1	0.924	0.753	0.900
	BI2	0.934		
	BI3	0.731		
Facilitating Conditions (FC)	FC1	0.774	0.473	0.767
	FC2	0.892		
	FC3	0.615		
	FC4	0.350		
Hedonic Motivation (HM)	HM1	0.824	0.647	0.846
	HM2	0.787		
	HM3	0.802		
Collectivism (I/C)	IC1	0.548	0.426	0.801
	IC2	0.876		
	IC3	0.802		
	IC4	0.744		
	IC5	0.316		
	IC6	0.437		
Power Distance (PD)	PD1	0.637	0.512	0.803
	PD2	0.802		
	PD3	0.836		
	PD4	0.547		

Performance Expectancy (PE)	PE1	0.931	0.645	0.876
	PE2	0.689		
	PE3	0.914		
	PE4	0.636		
Price Value (PV)	PV1	0.860	0.701	0.876
	PV2	0.787		
	PV3	0.864		

During the data analysis, it was found that all the composite reliability ranged from 0.767 to 0.900. This meets the threshold value of 0.7 to 0.9 recommended by (Ramayah et al. 2018). However, the Average Variance Extracted (AVE) values for two variables did not meet the threshold value of 0.5 (Bagozzi and Yi 1988; Fornell and Larcker 1981; Hair et al. 2017). These variables are facilitating conditions and collectivism with AVE values of 0.473 and 0.426 respectively. The decision to retain the indicators despite the AVE being below the threshold value is supported by Fornell and Larcker (1981) which stated that a researcher can use composite reliability alone to determine the validity of a measurement model. This is because the AVE is a more conservative measure of the validity of a measurement model. As there is empirical evidence that all the composite reliability meets the threshold value of above 0.7, the internal reliability of the items in the questionnaire is acceptable.

Hence, the next step was to assess the outer loadings of the reflective latent variables. The threshold value for outer loadings is above 0.4 (Hulland 1999). Upon assessment of the outer loading values, it was found that one item for facilitating conditions which is FC4 had a loading of 0.350. Despite this, the item was retained as the construct still demonstrated acceptable composite reliability.

On the other hand, an assessment was done on the formative construct of the study which is financial literacy. The index being reported for this construct is the Variance Inflation Factor (VIF) which assesses the level of collinearity between formative indicators (Ramayah et al. 2018). High correlations are not expected between formative indicators as it can impact the outer weights and statistical significance. Table 3.2 summarizes the reliability findings for the formative construct in this study.

Table 3. 2 Pilot Study Results for Formative Measures

		Weights	Outer Variance Inflation Factor
Threshold Value		**> 0.40**	**< 5**
Construct	**Items**		
Financial Literacy (FL)	FL1	-0.133	1.357
	FL2	0.473	1.777
	FL3	0.202	1.784
	FL4	-0.539	3.265
	FL5	0.431	2.574
	FL6	0.138	3.277
	FL7	-0.138	1.393
	FL8	0.483	1.420
	FL9	0.168	2.131

Upon assessment of the formative indicators of financial literacy, it was found that all the indicators had values ranging from 1.357 to 3.277 which meets the threshold value stated by Diamantopoulos and Siguaw (2006) in which VIF 3.3 or higher is not desirable because it indicates a potential collinearity issue. The next index being reported for formative measures is outer weights. From the data analysis, it was found that only four indicators met the threshold value of above 0.4 which are FL2, FL5 and FL8. All the other indicators did not meet the threshold value. However, these indicators were retained as these are theory-driven conceptualizations (Ramayah et al. 2018). Furthermore, these indicators are the newly developed items for this study which require a greater sample size to truly validate the items. Given these results, all the variables are reliable and valid to proceed for actual data collection.

Hence, no amendments were made to the English version of the questionnaire. No deletion or addition of items were made. The participants of the pilot study also provided feedback to improve the level of ease to answer the questionnaire. The translated version of the questionnaire was amended in terms of formatting and some wordings to improve the quality of translation. Responses obtained from the pilot study

were not utilized in the full-scale study. The following table outlines the item loadings, composite reliability and Average Variance Extracted (AVE), item weights and Variance Inflation Factor (VIF). The following section details the measurement scale used in this study.

3.11 Measurement Scale

This study utilizes a Likert scale to measure the responses in the questionnaire. The Likert scale is an attitude measurement scale developed as part of a doctoral dissertation in 1932 (Likert 1932). This approach enables questionnaire respondents to indicate the extent to which they agree or disagree on statements. The total number of categories in the scale usually range from three to seven. They are usually numbered from (1) to (7). Each category is usually labeled "Strongly Agree" to "Strongly Disagree". Consequently, the individual's responses to a series of statements are tabulated to obtain a composite value which indicates the respondents attitude towards the area of study (Willits, Theodori, and Luloff 2016). It is recommended for researchers to use multiple statements instead of one to yield reliable and valid data. More importantly, the use of multiple items under a single variable assists with the explanation of complex theoretical concepts or attribute (McIver and Carmines 1981).

In this study, a 5-point Likert scale is utilized to measure the attitudinal responses to the statements. The scale is labelled according to the following: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly Agree. Although it is possible for the researcher to extend the categories of the Likert scale to 7 categories, choosing to use a 5-point Likert scale increases the simplicity of the questionnaire. Moreover, there is evidence that the Cronbach Alpha reliability increased until five-point Likert scales but became stagnant once the number of categories increased (Lissitz and Green 1975). More importantly, the selection of the number of categories to include in a Likert scale relates to the willingness of the participants to accurately distinguish between their preference of categories such as "Strongly Agree" and "Agree". In line with this study, expecting low-income households to differentiate between several levels of "agree" may be unreasonable. Due to the low literacy among low-income households, it is

highly likely that they lack the depth and capacity to differentiate more complex Likert scales.

Variables using Likert scale in this study were adapted from pre-defined instruments. For instance, the independent variables from the UTAUT2 theory were measured using items utilized in the original survey done by Venkatesh, Thong, and Xu (2012). Meanwhile, the items utilized for the cultural dimensions were adapted from Hofstede (1980) and Srite and Karahanna (2006). A copy of the questionnaire has been included in Appendix C. Accordingly, the following section provides detailed explanation on the development of each variable in the conceptual framework of this study.

3.12 Instrumentation

In this study, there are three types of variables utilized in the conceptual framework: independent variables, moderating variables and dependent variable. The independent variables are performance expectancy, facilitating conditions, hedonic motivation, price value and financial literacy. Meanwhile, the moderating variables are power distance and collectivism. Consequently, the dependent variable is behavioral intention to accept digital financial services. All the items under the independent variable and dependent variable, with the exception for financial literacy were adapted from the original items developed by Venkatesh, Thong, and Xu (2012). In both the UTAUT and UTAUT2 model, all of the constructs adopted from these theories demonstrated reliable internal validity with internal consistency values (ICRs) greater than 0.70 (Venkatesh et al. 2003) and 0.75 (Venkatesh, Thong, and Xu 2012) respectively.

Permission has been obtained from the original authors to utilize the scale instruments together with proper citations. For the use of the UTAUT2 scale, permission was obtained through email from Venkatesh et al. (2016). Meanwhile, the use of other scales was permitted by all the other original authors under the premise of educational use and proper citations provided. As financial literacy is a contribution to this study, the items for this variable were developed from definitions obtained from past literature. Meanwhile, items for cultural dimensions were adapted from Hofstede (1980) and Srite and Karahanna (2006). The researcher modified the questionnaire

items to reflect use of digital financial services as the main technology. The modification of the questionnaire items was supported by Venkatesh et al. (2003) which encourages the modification of the original items to fit the context of a different study.

The following section details the development of questionnaire items for each variable and its measurement.

- **Performance Expectancy**

Performance expectancy can be defined as the extent that an individual believes that the use of digital financial services can benefit them (Venkatesh et al. 2003). The construct of performance expectancy was derived from variables in competing models such as perceived usefulness, extrinsic motivation, job fit, relative advantage and job expectations. From past studies, the variable of performance expectancy has also been empirically used to measure the amount of convenience that a consumer enjoys from the flexibility of use wherever and whenever (Alalwan, Dwivedi, and Rana 2017). In another study pertaining internet banking, performance expectancy relates to the perception for convenience in making payments, timely response and service efficiency (Zhou, Lu, and Wang 2010). Hence, this variable was measured using four items adopted from Venkatesh, Thong, and Xu (2012).

- **Facilitating Conditions**

Facilitating conditions is defined as the extent that an individual believes that necessary infrastructure are available to assist with the adoption of digital financial services (Venkatesh et al. 2003). This determinant was derived from three variables of competing models which are perceived behavioral control, facilitating conditions and compatibility. This construct is key because the use of digital financial services requires specific set of skills and resources for optimal use (Alalwan, Dwivedi, and Williams 2016; Zhou, Lu, and Wang 2010). In past empirical studies, this construct was related to the perceived infrastructure support available, level of customer service support and resource available (Alalwan, Dwivedi, and Rana 2017). Therefore, four

items to measure facilitating conditions were adopted from the original scale developed by Venkatesh et al. (2003).

- **Hedonic motivation**

Hedonic motivation is defined as the extent that an individual derives fun and pleasure from the use of digital financial services (Venkatesh, Thong, and Xu 2012). In other words, it measures the perceived level of enjoyment for both users and non-users of digital financial services. This variable has been empirically tested in mobile banking to measure the level of interactivity and uniqueness of the digital financial service (Püschel, Mazzon, and Hernandez 2010). Hence, this study adopted three items for this construct from Venkatesh, Thong, and Xu (2012). However, the researcher made modifications to the meaning of the three items as the items utilized in the original scale are very similar to each other which can lead to multicollinearity. To increase the quality of the item scales, this study investigated specific traits of digital financial services that can invoke hedonic motivation. The three specific traits for hedonic motivation adopted for this study are the interactive features, personalized user experience and the overall user experience.

- **Price Value**

Price value is defined as the extent to which individuals believe that perceived benefits obtained outweigh the monetary cost of accepting digital financial services (Dodds, Monroe, and Grewal 1991b). Past studies have empirically measured this variable by relating it to the cost of facilities such as 4G services, purchase cost of a mobile phone and wireless connection (Wi-Fi) bills (Alalwan, Dwivedi, and Rana 2017). Meanwhile, Baptista and Oliveira (2017) related price value to elements such as initial setup costs, cost of transaction and mobile internet costs. Hence, this study adopted three items from the original scale by (Venkatesh, Thong, and Xu 2012). However, the items were modified as the original scale items were very closely related to each other that it could result in multicollinearity. To improve the meaning of each scale, wordings of each item were modified to make it simpler for respondents to distinguish the implied meaning of each item.

- **Financial Literacy**

According to OECD's (2011) definition, financial literacy is defined as a combination of awareness, knowledge, skill, attitude, and behavior when making financial decisions. Aligned with the context of this study, this construct relates to the basic financial knowledge and decision-making skills of low-income households in accepting digital financial services. Due to the similarities in the elements stated in the OECD's (2011) definition, three main elements were adopted in this survey which are financial knowledge, financial behavior and financial attitudes. These elements were selected to measure financial literacy because they represent a comprehensive way to measure financial literacy. This determinant was measured using items adopted from the Big Three questions developed by Mitchell and Lusardi (2015b). Three main financial aspects assessed through this method were the understanding of interest rate, inflation and risk diversification. These aspects were assessed through three multiple choice questions. The development of these questions do not require complicated calculations but simply evaluate if people can engage in elementary calculations (Lusardi and Mitchell 2011). Despite this, the researcher found that these three questions were insufficient to understand the depth of financial literacy that low-income households possess. In fact, these questions only measure one element, which is financial knowledge.

Therefore, the researcher also complemented the use of the Big Three questions with the definition from OECD (2011), which resulted in 9 items being developed to measure financial literacy. Statements FL1 to FL3 test financial knowledge through concepts such as awareness of transaction fees, investment risk and inflation rate. These concepts were adopted from Mitchell and Lusardi (2015) through the Big Three questions. Meanwhile, FL4 to FL6 test financial behavior through price comparison, credit card interest rate selection and risk diversification. These represent examples of simple to complex financial behavior that low-income households engage in.

In FL7 to FL9, financial attitudes were tested through current savings level, debt reduction and sufficiency of household income in the past 1 year. The development of these items was based on the findings of the Financial Capability and Inclusion Demand Side Survey conducted by Bank Negara Malaysia in 2015. Key findings indicated that Malaysians often have a short-term view of financial planning because

of the need for instant gratification. Additionally, more than 75% of Malaysians are unable to come up with RM1,000 in the case of an emergency (Ministry of Finance 2017). Hence, a total of 9 items were adopted to measure financial literacy through consideration of definitions and behavior of low-income households.

- **Behavioral Intention**

Behavioral intention is defined as the overall attitude towards the use of digital financial services (Venkatesh et al. 2003). Although it is widely known that predicting behavior is a complex process, there is empirical support that behavior is a reliable predictor of how people generally act (Ajzen and Fishbein 1980). Past constructs from competing model which were synthesized to develop behavioral intention were attitude toward behavior and intrinsic motivation. The development of this construct relates to the level of liking, enjoyment and pleasure associated with the use of digital financial services. This study posits that the actual use of digital financial services can be predicted through the behavioral intention to accept digital financial services. Support has been established that behavioral intention is a reliable predictor for actual use of technologies (Martins, Oliveira, and Popovič 2014;Yu 2012). Therefore, three items were adopted from the scale developed by Venkatesh et al. (2003) with slight modifications to reflect both users and non-users of digital financial services.

- **Power Distance**

Power distance is defined as the extent that lower-ranked individuals in the society perceive that power inequality is a norm (Srite and Karahanna 2006). In a high-power distance society such as Malaysia, lower-rank individuals are highly compliant of instructions from higher rank individuals. The scale was adopted from Srite and Karahanna (2006). The original scale items displayed good composite reliability as all the values were found to be above the recommended value of 0.70 (Fornell and Larcker 1981). However, it was slightly modified to fit the context of low-income households. Therefore, the scale was modified from an organizational context to a household context. In a similar study, Yoon (2009) utilized the original scale items to measure the moderating impact of power distance between trust and the use of e-commerce.

The responses for this construct were categorized using the 5-point Likert Scale which range from 1 to 5. These responses begin from Strongly Disagree to Strongly Agree. Therefore, if a respondent primarily answers from 1 to 3 which are Strongly Disagree to Neutral, this will result in a low average mean score for this construct. Hence, this indicates that the respondent has high power distance because they prefer making decisions independently instead of considering opinions from family members.

From the opposing perspective, if a respondent primarily answers from 4 to 5 which are Agree and Strongly Agree, this results in a high average mean score for this construct. Consequently, this indicates that the respondent has a low power distance as it indicates that the individual believes that consulting with family members is important compared to making autonomous decisions.

Therefore, four items were adopted and modified to measure the moderating impact of power distance.

- **Collectivism**

Collectivism is the extent that an individual prioritizes the welfare of a group instead of their individual welfare (Zhang, Weng, and Zhu 2018). Similarly, the scale for these moderating variables were adopted from Srite and Karahanna (2006) and were modified to fit the context of low-income households. In another study, Khan, Hameed, and Khan (2017) utilized the original items for individualism/collectivism to investigate the moderating impact of behavioral intention on the use behavior of online banking. Yoon (2009) also utilized the original scale items to measure the moderating impact of individualism/collectivism on the relationship between trust and intention to use e-commerce. The use of the scale was empirically validated in the study as it had a Cronbach Alpha value of 0.761 which was above the recommended 0.70 value. In a recent study, Sharma, Singh, and Sharma (2020) utilized the original items from Srite and Karahanna (2006) to investigate the moderating impact of individualism/collectivism on internet banking in Fiji.

The responses for this construct were categorized using the 5-point Likert Scale which range from 1 to 5. These responses begin from Strongly Disagree to Strongly Agree. Therefore, if a respondent primarily answers from 1 to 3 which are Strongly Disagree

to Neutral, this will result in a low average mean score for this construct. Hence, this indicates that the respondent has individualistic values because they do not agree that being accepted as a family member is more important than having independence.

On the other hand, if a respondent primarily answers from 4 to 5 which are Agree and Strongly Agree, this results in a high average mean score for this construct. These respondents indicate that they possess collectivistic values because they believe in the importance of being accepted as a family member.

Hence, 6 items were adopted and modified to measure the moderating impact of collectivism.

3.13 Control Variables

In this study, five control variables are adopted. Control variables are independent variables which have been established as key predictors in the past. From the original UTAUT theory, the standard control variables are age, gender, experience and voluntariness of use (Venkatesh et al. 2003). However, voluntariness of use was consequently dropped as a control variable in UTAUT2 as the extended theory has shifted to a non-mandatory use context instead of a mandatory use in the UTAUT theory. Standard control variables from the UTAUT2 theory are age, gender and experience. In fact, these variables were collectively known as individual differences in the UTAUT2 theory. However, UTAUT2 encourages researchers to add more control variables which are found to potentially impact findings of the study (Venkatesh, Thong, and Xu 2012).

With consideration from past literature, the following are control variables that this study adopts:

a) Age

At different stages of age, changing cognitive capabilities changes an individual's technology acceptance. There are studies that have shown that age impacts the way that people accept change. People who are older are less likely to adopt a technology

as their lack of cognitive capabilities may hinder them from processing new or complex information (Morris, Venkatesh, and Ackerman 2005; Pierce et al. 2014). Moreover, age also impacts the level of consumer innovativeness an individual possesses (Lee et al. 2010).

b) Gender

Between men and women, gender roles are distinct. In fact, gender roles change throughout different stages of life. For instance, men are more willing to undergo challenges to achieve their goals. In comparison, women are more likely to minimize the amount of effort required to achieve their goals (Venkatesh and Morris 2000). There are also past empirical studies that have shown distinct gender roles as people age which causes older women to focus on facilitating conditions during technology acceptance. Additionally, women are more likely to be price sensitive when adopting technology acceptance compared to men. This is because women are often the people who manage the finances in a family while men are more willing to spend more money on technologies because they have a greater preference for technologies (Venkatesh, Thong, and Xu 2012).

c) Experience

Experience is the opportunity to use a technology and is usually conceptualized through a passage of time from the initial to post use of the technology (Kim and Malhotra 2005). In fact, experience is often related to habit. However, an important distinction between these two concepts is that experience is a requirement to form a habit but is not sufficient to form a habit on its own (Venkatesh, Thong, and Xu 2012). With experience, this encourages familiarity with the technology which leads to improved user learning. Hence, increased experience also forms greater association between cues and behavioral intention to accept a technology (Ouellette and Wood 1998).

d) Ethnicity

The role of ethnicity in technology acceptance is an important variable to be considered in technology acceptance because there are different cultural norms, values and rules which can considerably impact the type of upbringing that an individual experience. As this study relates to the likelihood of adopting digital financial services, an important area to consider is the financial habits of Malaysians. According to The Star (2018), Malaysians have the poorest level of household savings, which makes Malaysians among the poorest savers in Asia. Furthermore, the classification of Malaysians in the form of ethnicity through natives and non-natives also reveal distinct financial habits. In Malaysia, natives are those classified as Bumiputera. Meanwhile, non-natives are the non-Bumiputera such as Chinese, Indian and others. In a study conducted by Goi et al. (2019), Malays, which are natives, were found to be less likely to save money compared to other races in Malaysia. Additionally, Malays are more likely to incur more expenses than their income, take up credit card and lack financial assets (Loke 2016). In comparison, non-natives such as the Chinese are more financially savvy which leads to greater financial achievements and knowledge about financial offerings (Ismail and Awang 2008).

e) Highest level of education

With a higher level of education, this can lead to a greater likelihood of technology acceptance. An improved level of education can also lead to increased financial literacy through formal education. Financial literacy interventions in educational institutions have been shown to improve the propensity to budget, save and save appropriately (Worthington 2016). In Malaysia, financial education has been incorporated into the school curriculum for students in Standard 3 until high school levels (Murugiah 2016). More importantly, it has been shown that level of financial literacy differs across different education levels. In a study conducted in Malaysia, it was shown that the level of financial literacy is the highest among Bachelor Degree holders (Murugiah 2016). From past studies, it has been shown that education bears a positive and significant impact on financial literacy (Joo and Grable 2004; Taft, Hosein, and Mehrizi 2013). An increased level of financial knowledge and the ability

to apply this in financial decision making can significantly impact technology acceptance as they are more likely to engage in good financial habits.

3.14 Data Analysis

This study adopts two types of statistical techniques for data analysis. Firstly, this study utilized Statistical Package for the Social Sciences (SPSS) to provide the preliminary and descriptive data analysis. Next, this study used the Partial Least Squares Structural Equation Modelling (PLS-SEM) to evaluate the relationship between the variables in the conceptual framework in this study.

3.14.1 Preliminary Data Analysis

Preliminary data analysis is a key process for studies that utilize multivariate data analysis. As this study utilizes structural equation modeling (SEM), preliminary data analysis ensures that the key assumptions in the multivariate analysis of SEM are all fulfilled and no violations occurred (AlAnazi, Mohd. Shamsudin, and Johari 2016). In fact, the validity of inferences made through statistical test results rely on whether the key assumptions have been fulfilled. Therefore, the data collected in this study were subjected to six preliminary analyses which are missing values, statistical outliers, normality, linearity, homoscedasticity, and multicollinearity. All these tests are conducted using SPSS.

3.14.2 Descriptive Data Analysis

The purpose of descriptive statistics is to describe the characteristics of the sample accurately. This process is conducted using the Statistical Package for the Social Sciences (SPSS) software. Furthermore, descriptive statistics enable the summary of the data to be available in a useful and informative manner. In descriptive statistics, the mean, median, standard deviation, range of scores, skewness and kurtosis of the

relevant background information are analyzed. This includes the number of participants in the sample, range and mean of the age, education level as well as any other relevant background information. Additionally, the normality of the distribution is also assessed using skewness and kurtosis values. For the field of social science, the data distribution is often non-normal (Bono et al. 2017).

In this study, the descriptive data analysis is divided into several sections. Firstly, the researcher conducted a demographic analysis to identify the frequency and percentage of elements such as gender, age, state of origin, ethnicity, highest educational qualification, types of digital financial services used, frequency of use for digital financial services and period of use for digital financial services. Secondly, the mean and standard deviation of all the variables in the conceptual framework were tabulated. These variables are performance expectancy, facilitating conditions, hedonic motivation, price value, financial literacy, behavioral intention, power distance, and collectivism.

3.14.3 Partial Least Squares Structural Equation Modeling (PLS-SEM)

This study adopts structural equation modeling (SEM) as a method for data analysis. SEM is defined as the second generation multivariate data analysis method which is used to test hypotheses in fields such as social science and research (Risher and Hair 2017). In fact, SEM is a combination of path modeling and factor analysis (Ramayah et al. 2018). In recent years, the popularity of SEM as a statistical tool has increased greatly (Hair et al. 2017). The success that SEM has experienced can be attributed to its ability to explain a great amount of variance in dependent variables. Consequently, this means that SEM is statistically more powerful compared to multiple regression (Hair et al. 2017). Furthermore, researchers increasingly use SEM because it can assess latent variables at an observational and theoretical level. This is because SEM classifies a framework into inner and outer models which are known as measurement model and structural model respectively (Hair et al. 2012). When choosing to apply SEM, researchers have two variations for SEM analysis which are covariance-based SEM (CB-SEM) and variance-based partial least squares SEM (PLS-SEM).

Hence, this study utilizes the partial least squares structural equation modeling (PLS-SEM) approach to analyze the hypothesized relationships between five potential determinants and the behavioral intention to accept digital financial services. Additionally, two moderating variables are also investigated in this research which are power distance and collectivism. PLS-SEM is a second-generation multivariate data analysis method which can be used to estimate structural equation models (Hair, Ringle, and Sarstedt 2012). It also aims to maximize the explained variance of the latent constructs within a theoretical framework (Ramayah et al. 2018). PLS-SEM also provides an alternative to CB-SEM for research models that do not meet the criteria set for the maximum likelihood methods (Hair et al. 2012). Much of PLS-SEM success can be attributed to the method's ability to deal with modeling issues such as non-normal data, small sample sizes and complex models (Hair et al. 2014).

The use of PLS-SEM is justified for this study based on the guidelines set by Hair, Ringle, and Sarstedt (2011). Table 3.3 outlines the rule of thumb which can be used to select CB-SEM or PLS-SEM.

Table 3. 3 Rules of Thumb for Selecting CB-SEM or PLS-SEM

Criteria	PLS-SEM	CB-SEM
1. Research goals	• To predict key target constructs or determinants • Exploratory research • Extension of an existing theory	• To test a theory • To confirm a theory • To compare alternative theories
2. Measurement model specification	• Structural model consists of formative constructs	• In the case where error terms require additional specification, such as co-variation
3. Structural model	• Complex model • Contains many items and indicators	• Non-recursive model
4. Data characteristics and algorithm	• Data does not meet CB-SEM assumptions • Small sample size • Non-normal data	• Large data sets • Large sample size • Normal data
5. Model evaluation	• If latent variable scores are necessary for subsequent analyses	• Global goodness-of-fit criterion is necessary • Measurement model invariance needs to be tested

Source: Compiled from Hair, Ringle, and Sarstedt (2011)

Firstly, PLS-SEM was selected for this study because the research goals of this study seeks to identify the determinants of the behavioral intention to accept digital financial services. This aligns with the selection criteria of PLS-SEM, which is to predict key target constructs or determinants. Moreover, this study also seeks to extend the existing UTAUT2 theory by adding a new construct to the framework, which is financial literacy. The construct of financial literacy has never been empirically tested in literature using the UTAUT2 framework. The moderating cultural dimensions variables which are power distance and collectivism, also extend the theory of UTAUT2 as a technology acceptance theory as they combine this framework with the Hofstede National Culture Theory.

Secondly, another key reason that PLS-SEM was selected for this study is because the framework of this study contains formative constructs. In a SEM model, constructs can be classified into reflective and formative constructs. The classification of these constructs depends on the direction that the causal arrow is pointing. In the case of a formative construct, the arrow points from a lower order construct to a higher order construct (Hair et al. 2014). Although both CB-SEM and PLS-SEM can handle formative constructs, PLS-SEM is the recommended method to deal with formative constructs. Although CB-SEM can handle structural models with formative constructs, the process is complex and it has limited specification rules (Diamantopoulos and Riefler 2011; Hair, Ringle, and Sarstedt 2011). Moreover, the use of CB-SEM to deal with formative constructs has also been proven to lead to identification issues (Jarvis, MacKenzie, and Podsakoff 2003).

Thirdly, PLS-SEM was selected as it has the capacity to deal with a complex structural model. In fact, the theoretical framework of this study contains more than ten items including all the indicators in the measurement model. Fourthly, the use of PLS-SEM supports both small and large sample size. Although PLS-SEM is suitable to deal with small sample sizes (Henseler 2010; Reinartz, Haenlein, and Henseler 2009), it also has the capacity to deal with large sizes as stated by Ramayah et al. (2018), where the results yielded using both methods are similar. CB-SEM is equipped to deal with large sample size, but results yielded are similar to PLS-SEM. Moreover, this study fulfills the requirement to use PLS-SEM based on the data characteristics as the sample size

is larger than ‘ten times the largest number of formative indicators used to measure one construct. The largest number of formative indicators in this study is 9, which is used for financial literacy. As the sample size for this study is 343, it exceeds 10 times the number of the indicators to use PLS-SEM which is 90. As results yielded using both PLS-SEM and CB-SEM are similar when dealing with large sample sizes, other factors must be taken into consideration when selecting PLS-SEM, such as the normality of the data.

Hence, PLS-SEM is also utilized for this study because it can analyze non-normal data. As data collected for social science research is often classified as non-normal data, PLS-SEM is the recommended method to analyze non-normal data (Hair et al. 2014). Data analysis using SPSS through the skewness and kurtosis method proves that data for this research is non-normal. This is because the skewness and kurtosis values are outside the range of -1 to +1. The use of PLS-SEM is suitable for this research because it is less stringent when dealing with non-normal data and has the ability to transform non-normal data according to the central limit theorem (Beebee, Pell, and Seasholtz 1998; Cassel, Hackl, and Westlund 1999). Therefore, all these characteristics point to the use of PLS-SEM as the approach to analyze the research data in this study.

The use of PLS-SEM is also consistent with the approach taken by other studies which aim to predict technology acceptance using the UTAUT2 framework (Abrahão, Moriguchi, and Andrade 2016; Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Goularte and Zilber 2019; Khatimah, Susanto, and Abdullah 2019; Kwateng, Atiemo, and Appiah 2018; Raza, Shah, and Ali 2019).

3.14.4 Reflective vs Formative Models

To distinguish between a reflective and formative model, it is important to understand the nature of the indicators. Table 3.4 outlines the guide in differentiating between a reflective and formative measurement model by Coltman et al. (2008).

Table 3. 4 Differentiating Between Reflective and Formative Measurement Models

Criteria	Reflective	Formative
1. Direction of causality	• Causal arrows point from higher order construct to lower order construct	• Causal arrows point from lower order construct to higher order construct
2. Nature of the construct	• Independent of the measures	• Combination of the measures
3. Indicator characteristics	• Highly correlated • Highly interchangeable • Changes in latent variable impact measures	• Indicators do not need to have a similar theme • Changes in measures does not impact the latent variable

Source: Compiled from Coltman et al. (2008)

A reflective construct is formed when the causal arrows point from the latent variable to the measured indicators. In simpler words, a model is reflective when a higher order construct has causal arrows which point to a lower order construct. Secondly, a key characteristic of a reflective model is that the construct is independent of the indicators. Removal of any indicators does not impact the latent variable (Haenlein and Kaplan 2004; Hulland 1999). However, changes to the latent variable cause changes to the indicators (Ramayah et al. 2018).

Meanwhile, a formative construct is formed when the causal arrows point from the indicators to the measured latent variable. In simpler words, a model is formative when the causal arrows point from a lower-order construct to a higher-order construct. As for the nature of the construct, it is a combination of all the indicators. Additionally, the indicators for a formative model do not need to share a common theme. Any changes in the indicators can cause an impact on the measured latent variable. In other words, the indicators are not interchangeable.

In this study, almost all the variables are reflective measurement models except for financial literacy. The modelling of the original UTAUT2 variables which are performance expectancy (PE), facilitating conditions (FC), hedonic motivation (HM), price value (PV) and behavioral intention (BI) as reflective constructs was done because Venkatesh, Thong, and Xu (2012), which are the original authors of the theory stated that the independent variables of the theory are all measured using reflective indicators. This is further supported by other technology acceptance studies that also modelled these independent variables as reflective measurement models (Arenas-

Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Alalwan, Dwivedi, and Rana 2017; Baptista and Oliveira 2017).

Meanwhile, financial literacy is also modeled as a formative measurement model similar to the work on financial literacy done by Lajuni et al. (2018). Lastly, the modelling of the moderating variables in this study which are power distance (PD) and collectivism (C) as reflective measurement models is similar to another UTAUT2 technology acceptance study using Hofstede national cultural dimensions (Baptista and Oliveira 2015). Other studies which used the Hofstede national culture dimensions have also modelled these variables as reflective measurement models (Choi et al. 2014; Isaacson, Jordaan, and van Heerden 2018; Tehseen et al. 2017).

Hence, this study utilizes the two-step procedure recommended by Anderson and Gerbing (1988) for SEM. Using this method, the measurement model is the first test for validity and reliability. Then, the structural model and hypotheses were tested.

3.14.5 Measurement Model

According to Hair et al. (2014), a measurement model is known as an outer model where the relationship between a construct and its indicator variables are shown. The assessment of the measurement models forms a foundational construct for structural model testing (Hair et al. 2014). More importantly, the assessment of a measurement model begins by first distinguishing between a reflective and formative model (Ringle, Sarstedt, and Zimmermann 2011; Sarstedt and Schloderer 2009). Depending on the construct, there are different evaluative measures that the researcher needs to take.

I. Reflective Measurement Model

a) Internal Consistency Reliability

For a reflective measurement model, there are three steps to assess the model. Firstly, internal consistency reliability is examined. The method used to examine internal consistency reliability is through composite reliability. The PLS-SEM method utilizes composite reliability because it considers the indicator loadings (Ramayah et al. 2018). This differs from the traditional way of measuring internal consistency reliability,

which is Cronbach alpha (Cronbach and Meehl 1955) because the previous method assumes that every indicator produce the same loadings (Werts, Linn, and Jöreskog 1974). As this assumption is inappropriate and the use of Cronbach alpha has resulted in many methodological issues, using composite reliability as an alternative is highly recommended. Moreover, the use of the Cronbach alpha is also flawed because it is sensitive to the number of items in the scale. This results in the underestimation of the internal consistency reliability (Hair et al. 2014). There are two acceptable threshold values for composite reliability which are values above 0.60 for exploratory research and 0.70 to 0.90 for non-exploratory research. Hence, values above 0.90 are not accepted because it indicates that all the indicators measure the same phenomenon.

b) Indicator Reliability

The next method is through indicator reliability through outer loadings. The purpose of this method is assess whether the indicators of a variable truly measure what it is meant to measure (Urbach and Ahlemann 2010). There are several acceptable threshold values from past literature for indicator reliability which are equal to or greater than 0.4 (Hulland 1999), 0.5 (Byrne 2016), 0.6 (Byrne 2016), 0.7 (Hair et al. 2010) and 0.708 (Hair et al. 2010). If there are indicators that do not fulfill these threshold values, Henseler, Ringle, and Sinkovics (2009) cautioned researchers to only eliminate indicators if the indicator's reliability is low. The elimination of an indicator subsequently increases the Average Variance Extracted (AVE) and composite reliability (CR).

c) Convergent Validity

The second step in measuring a reflective measurement model is convergent validity. This method investigates the extent of individual indicators reflecting a construct compared to the indicators of other constructs (Urbach and Ahlemann 2010). The unit of measurement utilized is the Average Variance Extracted (AVE). The AVE assesses the extent to which a latent construct explains the variance for its indicators (Ramayah

et al. 2018). The acceptable threshold value for convergent validity is that the AVE must be equal to or greater than 0.50 (Bagozzi and Yi 1988). For instance, an AVE value of 0.50 indicates the construct can explain more than half of the variance for its indicators (Hair et al. 2014).

d) Discriminant Validity

The final step is to measure discriminant validity. According to Hair et al. (2014), discriminant validity is defined as the extent that a construct is empirically different from the other constructs. Hence, discriminant validity can be measured using three methods which are cross-loadings, Fornell and Larcker criterion, and Heterotrait-Monotrait ratio of correlations (HTMT). For the cross-loadings criterion, the threshold value is the difference between loadings across latent variables in which it must not be less than 0.1 (Chin 1998a; Snell and Dean 1992). Next, the Fornell and Larcker criterion states that the AVE of a latent variable should be higher than the squared correlation of other variables. Lastly, the HTMT is a method introduced by Henseler, Ringle, and Sarstedt (2014) which estimates the extent of the true correlation between two constructs in the instance where they are perfectly measured. Moreover, the use of HTMT as a method complements the use of cross-loadings and the Fornell and Larcker criterion as it has been empirically proven to possess higher specificity and sensitivity rates compared to the other methods (Henseler, Ringle, and Sarstedt 2015). There are two acceptable threshold values for the HTMT method. If the HTMT value is close to 1, it indicates a lack of discriminant validity. Next, a HTMT value close to 0.85 (Kline 2011) to 0.90 (Gold, Malhotra, and Segars 2001) indicates that there are issues with discriminant validity. In the case where indicators do not meet the HTMT criteria, the indicators should be eliminated to be reassigned to other constructs if this is theoretically possible. As for the confidence interval bias corrected, both the lower and upper confidence intervals should not have the value of 1.

Table 3.5 summarizes all the details concerning reflective measurement model and the threshold values for each step.

Table 3. 5 Threshold Values for Reflective Measurement Models

Measurements	Index	Threshold Values
1. Internal consistency	Composite reliability	• Greater than 0.60 (exploratory research) • 0.70-0.90 is satisfactory
2. Indicator reliability	Loading values	• Equal to or greater than 0.4 • Equal to or greater than 0.5 • Equal to or greater than 0.6 • Equal to or greater than 0.7 • Equal to or greater than 0.708
3. Convergent validity	Average Variance Extracted (AVE)	• Greater than or equal to 0.50
4. Discriminant validity	Cross loading criterion	• Difference between loadings across latent variables must not be less than 0.1
	Fornell and Larcker criterion	• The AVE of the latent variable should be higher than the squared correlation of all other variables
	Heterotrait-Monotrait ratio of correlations (HTMT)	• Values close to 1 indicate a lack of discriminant validity • Values from 0.85 to 0.90 indicate a problem with discriminant validity

Source: Compiled from Ramayah et al. (2018)

II. Formative Measurement Model

As the details on how to assess the reflective measurement model have been completed, this section details on methods how to assess the formative measurement model. It is important that researchers distinguish between both formative and reflective measurement models as the principle underlying each of these models are fundamentally distinct (Hair et al. 2014). There are three steps in empirically measuring a formative measurement model: convergent validity, collinearity and significance and relevance of formative indicators.

a) Convergent Validity

According to Ramayah et al. (2018), convergent validity can be defined as the extent to which the formative measures of a latent variable highly correlates with reflective measures of the same latent variable. The type of analysis used to assess convergent validity is redundancy analysis (Chin 1998a, 1998b). The threshold value for this

analysis is where the correlation path coefficients for both constructs should be above 0.7 (Hair et al. 2017).

b) Collinearity

The next step is to assess the formative measures of the latent variable for collinearity issues. As the aim of formative measures is to minimize the overlap between the measures, high correlations between the indicators measuring the same latent variable is not desired. Collinearity occurs when a high correlation is found between two formative measures. In research, collinearity is not desirable because it bears a significant impact on the weights and statistical significance of the formative measures (Ramayah et al. 2018). In fact, collinearity can cause the results of a study to be biased (Mooi and Sarstedt 2011). Specifically, the weights which represent the contribution of the measures to the construct can be reversed which cause an underestimation in the level of significance (Hair et al. 2014).

This issue becomes more prominent in studies that have small sample sizes because the standard errors are further exemplified. The index utilized to assess collinearity issues is Variance Inflation Factor (VIF). From past literature, there are two widely accepted threshold values for VIF which are equal to or greater than 3.3 (Diamantopoulos and Siguaw 2006) or 5 (Hair, Ringle, and Sarstedt 2011) indicates potential collinearity issues.

c) Significance and Relevance of Formative Indicators

The last step in the assessment of formative measurement models is analyzing the significance and relevance of formative indicators. The method of analysis for this method is outer weights. According to Hair et al. (2017), outer weights are obtained through a multiple regression analysis where the latent variable is the dependent variable and the formative measures are the independent variables. The technique which is utilized to obtain the outer weights is called bootstrapping. As PLS-SEM

assumes a non-normal distribution, bootstrapping determines the level of significance for every indicators in the model through the outer weights (Hair et al. 2014). During bootstrapping, a large number of subsamples of 5,000 or more are obtained from the original data through replacement. This results in a computation of standard error for each model parameter. Consequently, the significance for each parameter can be determined using *t*-values.

Once the outer weights values have been obtained, researchers are cautioned not to simply remove formative measures that have low outer weights. Instead, researchers should consider the absolute contribution of the formative measure towards the measured latent variable. In this step, it is important to compare between the values of the outer weights from the formative measures and the outer loadings from the reflective measures. Consequently, there are two acceptable threshold values for this step. First, in the case where the outer weights for the measure is non-significant but the outer loadings are high, above 0.50, the researcher should retain the measure. Secondly, if the outer weight for the measure is non-significant and the outer loading is also non-significant, where the value is below 0.50, the researcher should consider deleting the measure.

It is recommended for researchers to consider the theoretical contribution when making the decision whether to delete formative measures or not. In other words, the statistical outcomes should not be the main factor leading to the deletion of formative measures. Moreover, the deletion of formative measures has almost no effect on the parameter estimates when the model is re-estimated (Hair et al. 2017). Table 3.6 summarizes all the details on the index and threshold values for formative measurement models.

Table 3. 6 Guide on Criteria and Threshold Values for Formative Measurement Models

Criteria	Index	Threshold Values
1. Convergent validity	Redundancy analysis	• Above 0.7 to demonstrate satisfactory level
2. Collinearity	Variance Inflation Factor (VIF)	• Values equal to or greater than 3.3 indicates potential collinearity problems • Values equal to or greater than 5 indicates potential collinearity problems
3. Significance and relevance of formative measures	Outer weights and outer loadings	• If outer weight is non-significant and outer loading is also non-significant (below 0.50), the formative measure should be deleted with consideration for theoretical and statistical significance

Source: Compiled from Ramayah et al. (2018)

III. STRUCTURAL MODEL

After the reliability and validity of the measurement model has been assessed, the next step is to assess the inner model, also known as the structural model. This process is also known as an inner model evaluation. This step involves the testing of hypothesized relationships in the framework of this study. As PLS-SEM does not have a standard goodness-of-fit statistic, Hair et al. (2017) recommended five steps to measure the structural model.

First, the structural model is assessed for lateral collinearity issues. This process is instrumental especially in models with formative constructs because the estimated values and significance of a structural model can be subjected to bias if the constructs are highly correlated (Hair et al. 2014). If a structural model is not assessed for lateral collinearity issues, this can lead to inaccurate findings because it can mask the causal effect in a model (Kock and Lynn 2012). The index utilized to assess lateral collinearity is Variance Inflation Factor (VIF). Hence, the threshold value where VIF is equal to or greater than 3.3 or 5 indicates that there may be a lateral collinearity issue (Diamantopoulos and Siguaw 2006).

The second step is to assess the significance and relevance of the structural model relationships. Under the PLS-SEM technique, there are no assumptions made about the distribution of the data. This can lead to issues because the t-values can be inflated or deflated if data for the study is non-normal. To solve this issue, researchers are recommended to do bootstrapping (Ramayah et al. 2018). This technique can estimate the normality of the data and obtain the t-values to evaluate the significance of the structural paths in this study (Wong 2013). In this step, the path coefficient is also assessed to investigate the significance of the hypotheses in this study. For path coefficients, the standard range of values are from -1 to +1 (Hair et al. 2014). The threshold value for this step is values close to +1, representing strong positive relationships. Meanwhile, values closer to -1 represent strong negative relationships. Although values close to +1 or -1 are almost always statistically significant, researchers must perform the bootstrapping method to obtain a standard error which assesses the significance level (Hair et al. 2014).

In the third step, researchers must assess the predictive accuracy of the model through R^2, also known as the coefficient of determination. In simpler words, R^2 represents the effect exogenous variables have on the variance of endogenous variables. The range of value for this step is 0 to 1. The higher the value, the higher the predictive accuracy. There are different threshold values recommended to assess R^2. Threshold values are classified as substantial, moderate and weak. The different threshold values are 0.26, 0.13, 0.02 (Cohen J. 1988), 0.67, 0.33, 0.19 (Chin 1998b) and 0.75, 0.50, 0.25 (Hair et al. 2017).

The fourth step is to assess the level of effect size, f^2. According to Cohen (1988), f^2 explains the impact of an exogenous construct on an endogenous construct. The threshold values for this step are 0.35, 0.15 and 0.02 which represents large, medium and small effect sizes. The last step in assessing the structural model is predictive relevance, Q^2. This method examines the predictive relevance of the inner model. In this step, it utilizes a sample re-use technique which omits a part of the data set, leading to an estimation of the model's parameters and the prediction of the omitted part using the estimates (Hair et al. 2014). This method of analysis is done using the blindfolding procedure. According to Ramayah et al. (2018), the blindfolding procedure is a resampling technique which deletes and predicts reflective measures of an endogenous construct. The threshold value of this model is any value above 0 indicating that

exogenous constructs exhibit predictive relevance for endogenous constructs (Hair et al. 2017; Geisser 1974; Stone 1974). Researchers are cautioned that although this method can indicate that an endogenous construct can be predicted, it is not an indication of the quality of the prediction (Rigdon 2014; Sarstedt et al. 2014).

Table 3. 7 Guide on The Criteria and Threshold Value for The Assessment of Structural Models

Criteria	Index	Threshold Values
1. Lateral collinearity	Variance Inflation Factor (VIF)	• 3.3 or 5 indicates possible lateral collinearity issue
2. Significance and relevance of the structural model relationships	Path coefficient	• Values close to +1 represent strong positive relationships • Values closer to -1 represent strong negative relationships
3. Predictive accuracy of the model	Coefficient of determination, R^2	• Threshold values are classified as substantial, moderate and weak • The different threshold values are 0.26, 0.13, 0.02 (Cohen 1988) • 0.67, 0.33, 0.19 (Chin 1998b) • 0.75, 0.50, 0.25 (Hair et al 2017)
4. Level of effect size	f^2	• 0.35, 0.15 and 0.02 which represents large, medium and small effect sizes
5. Predictive relevance, Q^2	Q^2	• Any value above 0 indicates that exogenous constructs exhibit predictive relevance for endogenous constructs

Source: Compiled from Ramayah et al. (2018)

IV. Moderator Analysis

Another crucial step in the assessment of the model using PLS-SEM is the moderator analysis. In this research, there are two moderating variables incorporated: power distance and collectivism. A moderating variable is defined as a third variable that changes the hypothesized relationship between an independent and dependent variable (Ramayah et al. 2018). A moderating variable is also known as a contingent variable. In fact, a moderating variable can change the impact of the relationship an independent variable has on a dependent variable depending on the value of the moderator

(Holmbeck 1997). Moderators are usually introduced in studies if there is a weak or inconsistent relationship between the independent and dependent variable.

In the process of developing hypotheses which involves moderators, it is important to explain the condition for the formation of the moderating interaction. For instance, researchers should specify if the relationship between the independent and dependent variable becomes stronger or weaker with the presence of the moderator (Dawson 2014). To measure moderating effects, there are three recommended approaches which are the Product-Indicator Approach (Chin, Marcolin, and Newsted 2003), Two-Stage Approach (Chin, Marcolin, and Newsted 2003) and Orthogonalizing Approach (Henseler and Chin 2010). Hence, this study utilizes the two-stage approach to measure the moderating effect of the cultural dimensions.

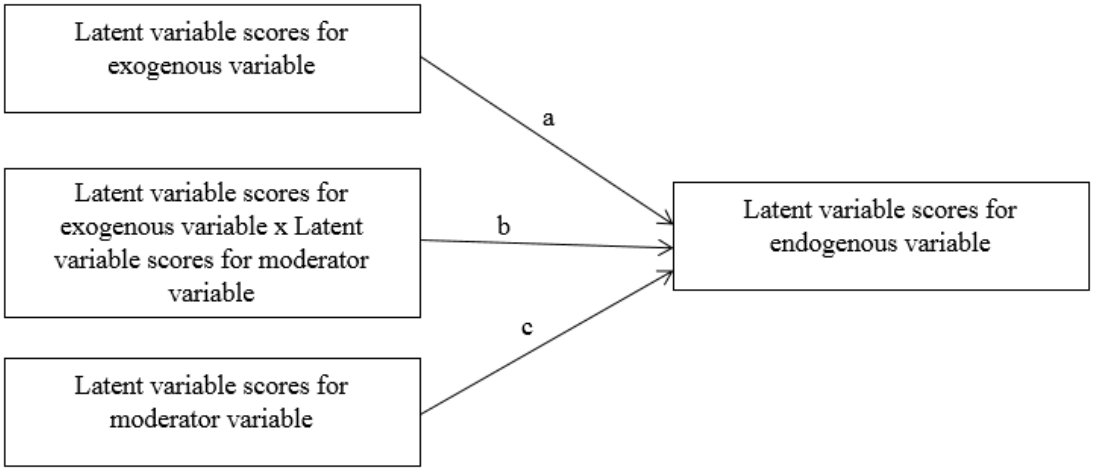
The two-stage approach was initially created by Chin, Marcolin, and Newsted (2003). The use of this method is most suitable when any of the constructs in the theoretical framework is a formative construct (Henseler and Chin 2010). Additionally, this approach is more accurate as it has a higher statistical power (Ramayah et al. 2018). Researchers are advised to select this approach when there are formative measures present in the theoretical framework (Henseler and Chin 2010). Regardless whether the formative construct is an exogenous or moderating variable, the two-stage approach is still the recommended method. Moreover, this approach can also be used to examine relationships between reflective measures (Ramayah et al. 2018). In other words, it is not necessary for formative measures to be present to use this approach. As this conceptual framework has a formative measure which is financial literacy, the two-stage approach is utilized. Next, the selection of this method should also be based on the aim of the analysis. If the aim of the research is to investigate whether the moderator plays a significant role on the relationship, the two-stage approach should be selected. This method yields high statistical accuracy and estimate compared to the other two methods. However, one key disadvantage of this model is that it does not take into consideration the moderating effect when computing the latent variable scores.

To begin measuring the moderating effects using the two-stage approach, there are two main steps. To begin, the main effect in the PLS path model is established. During this step, the latent variable scores for the exogenous, moderator and endogenous variable

are calculated. Therefore, the normal procedures for PLS-SEM are conducted according to the classification of reflective or formative constructs.

Then, the latent variable scores of the exogenous and moderator variable are utilized as independent variables in a multiple linear regression on the latent variable scores of Y. The following diagram illustrates the relationship between all the variables in the second stage of the two-stage approach.

Figure 3. 2 Stage 2 of The Two-Stage Approach



Source: Compiled from Ramayah et al. (2018)

From the figure above, "a" represents the main effect when the moderating effect is not taken into account. Meanwhile, "b" represents the effect when the moderating effect is included. Lastly, "c" represents the variation in the endogenous variable explained by the moderating variable. In the second stage, there are several important indexes. The first is the coefficient of determination, also known as the R^2. Specifically, the change between the main effect model R^2 and the interaction effect model R^2 should be compared. The second index is effect size, known as the f^2. The threshold values for f^2 are classified into small, medium and large which are 0.005, 0.01 and 0.025 respectively (Kenny 2016). This criterion should only be utilized if the study fails to adhere to the minimum effect size threshold suggested by Cohen (1988). The next index is the t-values obtained through the bootstrapping process. From the bootstrapping results, the interaction effect can be interpreted.

3.14.6 Ethical Considerations

Throughout the process of conducting this research, several ethical considerations were taken as this study deals with human subjects. Firstly, this study adheres to the principle of respect for individuals. Only individuals of age 18 and above were targeted in this study. Participants were required to read the participants information sheet which details key information about the research. Consequently, participants were required to tick a box prior to answering the questionnaire to imply consent. Additionally, participants were reassured that their participation in the research is completely voluntary.

Secondly, this study also adheres to the principle of beneficence. The welfare of the participants is the main goal of the research study. Hence, the study does not pose any risk to the participants. Lastly, this study upholds the anonymity and the confidentiality of data. Participation in the study by answering the questionnaire is completely anonymous and cannot be individually identified to them. There are no known conflicts of interest in this study.

This researcher also completed the research integrity training on Blackboard prepared by Curtin University. Prior to conducting any data collection, the researcher went through the process of ethical application to ensure that the researcher possess the qualification and necessary documents to conduct the research. Then, these documents were examined by Human Research Ethics Committee (HREC). The researcher also made amendments requested by HREC. The ethical application was approved with the approval number HRE2019-0837. The letter indicating ethical application approval is attached in Appendix A.

3.15 Summary

As a conclusion, the methodology section has covered many different elements of the methodology such as the sample inclusion criteria, size, location, method, the use of questionnaires, questionnaire design, pilot testing, measurement scale, instrumentation, control variables, data analysis, preliminary data analysis, descriptive data analysis, PLS-SEM, reflective and formative models, measurement model, structural model and ethical considerations. In the next chapter, Chapter 4 details the data analysis process and results.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 Chapter Overview

This purpose of this chapter is to present the data analysis findings obtained from the large-scale data collection. Throughout this chapter, several statistical tests were run. This chapter is divided into several subsequent sections. Firstly, 4.1 presents the overview of this chapter. 4.2 includes details of all the sections in the questionnaire. 4.3 provides the preliminary data screening with subsections which are missing values, outliers, normality check and common method bias. Subsequently, section 4.4 presents the demographic profile analysis conducted using the Statistical Package for the Social Sciences (SPSS) software. Section 4.5 details the data analysis for reflective measurement model assessment. done using Partial Least Squares Structural Equation Modelling. In the subsequent sections, 4.6 describes the details of the formative measurement model assessment using the SmartPLS 3.0 software. 4.7 covers the structural model assessment. Section 4.8 details the moderator analysis assessment. Subsequently, section 4.9 provides the results of the hypotheses testing. The following summarizes the title of each section.

4.1: Chapter Overview

4.2: Questionnaire Overview

4.3: Preliminary Data Screening

4.4: Demographic Profile

4.5: Partial Least Squares Structural Equation Modelling

4.6: Formative Measurement Model Assessment

4.7: Structural Model Assessment

4.8: Moderator Analysis Assessment

4.9 Results of Hypotheses Testing

4.2 Questionnaire Overview

In this section, data analysis findings were done through questionnaires which were distributed to respondents in Miri City, Sarawak. These questionnaires were distributed by the researcher through purposive sampling, which is a non-probability sampling design. During the process of questionnaire distribution, the researcher provided a participant information sheet which includes key details of the study such as the purpose of the study, benefits of participating in the study, confidentiality and researcher contact information. Once the participant has read the participant information sheet, the researcher provided the questionnaire for them to answer. The questionnaire consists of four sections. In Section A, it investigates the demographic profile of respondents through items such as gender, age, state of origin, ethnicity and highest educational qualification. Meanwhile, Section B gauges the digital financial services experience of respondents by investigating the types of digital financial services they currently use, frequency of use and history of use. Consequently, Section C analyzes the determinants of behavioral intention to accept digital financial services by using the predictors proposed in the UTAUT2 model and the financial literacy construct. Lastly, Section D examines the cultural dimensions of respondents through two constructs which are power distance and collectivism.

4.3 Preliminary Data Screening

Before the main data analysis is conducted, the data obtained from the questionnaires are subjected to several preliminary analyses. The purpose of these preliminary data analyses is to ensure that the data meets the statistical assumptions required to carry out the multivariate analysis. According to AlAnazi, Shamsudin, and Johari (2016), conducting a preliminary data analysis is important as it ensures the validity of inferences made from statistical results. Conducting preliminary data analysis ensures that no key assumptions of the multivariate analysis are violated. Furthermore, Broeck et al. (2005) has also stated that conducting preliminary data analysis can identify and minimize the impact of methodological errors on a study.

Once data collection was completed, data obtained was coded into the Statistical Package for the Social Sciences (SPSS) software. Consequently, the researcher then conducted preliminary data analysis on this data. Hence, the following section provides details the process and results of the preliminary data analyses which are missing data, statistical outliers, normality check and common method bias.

a) Missing Data

Missing data is one of the most pervasive issues concerning data analysis (Tabachnick and Fidell 2007). It is an issue that is seen across different research disciplines. However, the use of questionnaires is particularly vulnerable to this issue as researchers do not have much control over the respondents choice to not answer certain questions (Schafer and Olsen 1998). Dealing with human subjects further exemplifies the issue of missing data because Pallant (2013) posited that it is a rare occurrence to obtain complete data for every case involving human subject.

Missing data is an issue for researchers as there are statistical techniques that only includes complete observations in its calculations (Stavseth, Clausen, and Røislien 2019). In fact, an example of this software is the SmartPLS software that this study utilizes as it does not work even with a single missing data (AlAnazi, Shamsudin, and Johari 2016). More importantly, missing data can potentially indicate the loss of important information that can reduce the accuracy of the statistical power and increase standard errors (Peng et al. 2006). Historically, it is common for researchers to completely exclude cases with missing data from data analysis (Schafer and Graham 2002).

As this research utilizes offline questionnaires for data collection, it is highly likely that there is missing data due to the lack of supervision during the process. Hence, this study excludes any questionnaires with missing data because the SmartPLS software cannot utilize them in the calculations. In this research, a total of 380 questionnaires were distributed to low-income households in Miri City, Sarawak. From these questionnaires, a total of 37 questionnaires were found to contain missing data and were subsequently removed as they are considered as invalid data. From the 380

questionnaires being distributed, 37 questionnaires had invalid data. Therefore, the remaining 343 questionnaires were utilized for data analysis.

b) Statistical Outliers

Once the missing data have been identified and removed, the next step in preliminary data analysis is to check for statistical outliers. According to Tabachnick and Fidell (2007), statistical outliers can be defined as cases with extreme values on a single variable (univariate outlier) or extreme values on two or more variables (multivariate outlier). It is important to acknowledge that there is no standardized definition for outliers from past literature. In fact, there are different definitions of outliers which can be applied to the context of a study. For instance, Atkinson and Hawkins (1980) stated that outliers are values which lie outside a set of clusters. This study adopts the definition of outliers from Aggarwal (2013) which stated that outliers are values which show extreme deviation from the rest of the data, to the point that it raises the suspicion that it may have been generated by another mechanism.

However, the researcher decided to retain all the items in the constructs after considering the measurement instrument used in this research which is the Likert scale. As the outlier has been defined as a value which exhibits extreme deviation from the rest of the data, the use of the Likert scale supports the retaining of these outliers due to the nature of the measurement scale. This is because a Likert scale consists of a minimum and a maximum value. In the case of this study, the minimum value is 1 and the maximum value is 5. If a respondent answer on the extreme ends such as 1 or 5, this is not a representative of outlier behavior. More importantly, this study targets low-income households. Given that the poor acceptance of low-income households towards digital financial services is the main problem highlighted in this study, the lack of positive responses towards the questions should be expected. In fact, the different types of responses obtained through the Likert scale help investigate the important determinants of digital financial services acceptance which boost the level of acceptance among low-income households. If outliers are removed because the answers are inconsistent to the norm, this would be counterproductive for the objectives of this study.

Therefore, no cases were removed on the basis that all the values on the Likert scale are considered as realistic and plausible answers for the respondents. As a result, the sample size of 343 respondents was retained for further data analysis

c) Normality Check

The next step in preliminary data analysis is to conduct the normality check. According to Pallant (2013), normal data can be visualized through a symmetrical and bell-shaped curve. Assessing normality is important because the classification of data can lead to the use of different statistical techniques depending on the assumptions. Furthermore, non-normal data can inflate standard errors which leads to less accurate structural model relationships in the PLS-SEM analysis that this study adopts (Hair et al. 2017). Based on the recommendation by Pallant (2013), normality is first assessed using the Statistical Package for the Social Sciences (SPSS) software by obtaining the skewness and kurtosis values. Skewness refers to the symmetry of the data distribution. Meanwhile, kurtosis reflects the 'peakedness' of data distribution. If the data is perfectly normal, the skewness and kurtosis value is 0. However, this value is uncommon for social science research. The widely-used method to test for normality such as the Kolmogorov-Smirnov method has been found to be less precise when testing large data sample where the sample size is greater than 50 (Mishra et al. 2019). Hence, skewness and kurtosis values are utilized in this study to test for normality as it is more precise when testing for sample size greater than 300 (P. Mishra et al. 2019). As this study has 343 respondents, therefore the skewness and kurtosis method was utilized.

Table 4.1 details the skewness and kurtosis values for each variable in the conceptual framework. Items such as Performance Expectancy 1, 2, 3 and 4 refer to each statement in the questionnaire. These statements are usually denoted as PE1, PE2, PE3, PE4 and so on in the questionnaire. The threshold values for skewness and kurtosis are obtained from Hair et al. (2017) which stated that if skewness and kurtosis values are outside the range of -1 to +1, the distribution is considered to be non-normal.

Table 4. 1 Summary of Skewness and Kurtosis

	Skewness		**Kurtosis**	
	Statistic	Std. Error	Statistic	Std. Error
PE1	-0.840	0.132	0.834	0.263
PE2	-0.862	0.132	1.650	0.263
PE3	-0.900	0.132	0.346	0.263
PE4	-0.712	0.132	0.384	0.263
FC1	-0.261	0.132	-0.053	0.263
FC2	-0.356	0.132	0.246	0.263
FC3	-0.413	0.132	0.543	0.263
FC4	-0.753	0.132	1.069	0.263
HM1	-0.380	0.132	0.116	0.263
HM2	-0.576	0.132	1.052	0.263
HM3	-0.446	0.132	0.110	0.263
PV1	-0.599	0.132	0.897	0.263
PV2	-0.325	0.132	0.501	0.263
PV3	-0.212	0.132	-0.024	0.263
FL1	-0.433	0.132	-0.113	0.263
FL2	-0.397	0.132	-0.024	0.263
FL3	-0.536	0.132	0.213	0.263
FL4	-0.456	0.132	-0.658	0.263
FL5	-0.718	0.132	0.461	0.263
FL6	-0.382	0.132	-0.840	0.263
FL7	-0.366	0.132	0.089	0.263
FL8	-0.677	0.132	0.484	0.263
FL9	-0.318	0.132	-0.155	0.263
BI1	-0.289	0.132	-0.572	0.263
BI2	-0.536	0.132	0.379	0.263
BI3	-0.491	0.132	0.236	0.263
PD1	-0.520	0.132	-0.246	0.263
PD2	-0.624	0.132	-0.133	0.263

PD3	-0.616	0.132	0.391	0.263
PD4	-0.698	0.132	0.809	0.263
IC1	-0.667	0.132	0.790	0.263
IC2	-0.502	0.132	-0.078	0.263
IC3	-0.382	0.132	-0.190	0.263
IC4	-0.214	0.132	-0.598	0.263
IC5	-0.314	0.132	-0.233	0.263
IC6	-0.389	0.132	-0.223	0.263

From Table 4.1, the values for skewness range from -0.212 to -0.900. Meanwhile, the range of values for kurtosis range is from -0.024 to 1.650. These values clearly show that they exceed the threshold values of -1 to +1. From this, it can be concluded that the distribution is non-normal. Therefore, this justifies the use of PLS-SEM as a statistical method for data analysis as it fulfills the non-normal data assumption required by the method.

d) Common Method Bias

The last aspect for the preliminary data analysis is assessing common method bias. According to Podsakoff et al. (2003), common method bias is a common type of measurement error which originates from the measurement method instead of the constructs in a study. The presence of common method bias can negatively impact the validity of inferences yielded from statistical tests (Bagozzi and Yi 1991). In a thorough analysis of common method bias, Podsakoff et al. (2003) revealed many causes for common method bias. In relation to the method of collecting data in this study, which is questionnaire, there are several potential causes for common method bias.

The first cause is a factor called the consistency motif. This is a situation in which respondents try to match their cognition with their attitudes. Respondents try to appear consistent as well as rational in their responses, but it does not align with their actions in real-life situations. As a result, respondents answer similar questions in a consistent manner which is problematic especially when the researcher is trying to understand

their behavior (Johns 1994; Podsakoff and Organ 1986; Schmitt 1994). Secondly, respondents may experience social desirability bias in which they respond to questions in a way that they believe could increase their social acceptance. The third potential cause for common method bias is a common scale format such as the Likert Scale. Although the use of a common scale format does improves the ease to answer questionnaires, it has been shown to systematically influence the answers which subsequently leads to common method bias (Tourangeau, Rips, and Rasinski 2000).

Considering these causes for common method bias, there are two ways to deal with common method bias. The first method is the procedural remedy which is the recommendation that researchers typically use during the process of designing and developing a questionnaire prior to data collection. Podsakoff et al. (2003) outlined five main procedural remedies researchers can adopt to reduce common method bias. These remedies are:

- Adopting or adapting measures for the independent and dependent variables from different sources
- Using temporal, proximal, psychological, or methodological separation of measurement
- Ensuring respondents of their anonymity in answering questions
- Counterbalancing order of questions
- Being thorough in the development of scale items

In this study, the researcher adopted several of these remedies which are temporal, proximal, psychological, or methodological separation of measurement, ensuring respondents anonymity and being thorough in the development of scale items. Once the questionnaire has been distributed and data has been collected, the statistical remedies to test for common method bias can be utilized by the researcher. Therefore, researchers should test for common method bias using a statistical technique before actual data analysis is done.

One of the most common statistical procedures to test for common method bias is the Harman's single-factor test (Podsakoff et al. 2003). Using this test, common method bias is present if a single factor can explain for majority of the covariance among the measures. More specifically, Podsakoff, MacKenzie, and Podsakoff (2012) stated that common method bias exists if one factor can explain more than 50% of the variance

among the measures. Hence, Table 4.2 details the results obtained from the Harman's single-factor test.

Table 4. 2 Results for Harman's Single-Factor Test

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.077	25.214	25.214	8.394	23.318	23.318
2	3.270	9.083	34.297			
3	2.011	5.586	39.883			
4	1.937	5.379	45.262			
5	1.704	4.734	49.997			
6	1.415	3.929	53.926			
7	1.220	3.389	57.315			
8	1.170	3.251	60.565			
9	1.053	2.926	63.491			
10	0.934	2.594	66.086			
11	0.851	2.364	68.450			
12	0.837	2.325	70.774			
13	0.771	2.142	72.916			
14	0.724	2.012	74.928			
15	0.676	1.878	76.806			
16	0.645	1.793	78.599			
17	0.609	1.692	80.291			
18	0.568	1.577	81.868			
19	0.547	1.519	83.387			
20	0.531	1.474	84.861			
21	0.510	1.416	86.277			
22	0.496	1.379	87.656			
23	0.447	1.243	88.899			
24	0.437	1.214	90.113			

25	0.407	1.129	91.242			
26	0.389	1.079	92.322			
27	0.358	0.996	93.317			
28	0.343	0.953	94.271			
29	0.336	0.934	95.205			
30	0.312	0.866	96.070			
31	0.287	0.797	96.867			
32	0.254	0.707	97.574			
33	0.252	0.700	98.275			
34	0.233	0.647	98.921			
35	0.215	0.598	99.520			
36	0.173	0.480	100.000			
Extraction Method: Principal Axis Factoring.						

From Table 4.2, most of the co-variance is explained by the factor performance expectancy 1, at a cumulative percentage of 23.318%. This value is less than the threshold value of 50%. Therefore, it can be verified that common method bias does not exist.

To complement the use of the Harman's single-factor test, another test for common method is conducted which is the full multicollinearity test. According to Kock and Lynn (2012), this full multicollinearity test is a statistical procedure which assesses two elements which are vertical and lateral multicollinearity. Vertical multicollinearity is a common test that assesses predictor to predictor phenomenon, where two or more predictors are tested for redundancy. On the other hand, lateral multicollinearity is a predictor to criterion test, which assesses a hypothesized causal relationship for redundancy. In comparison to the Harman's Single Factor test, the full multicollinearity test assesses both aspects of multicollinearity in which lateral multicollinearity is almost never tested in multivariate analyses.

This test is run in the SmartPLS software. Hence, the index for the test is Variance Inflation Factors (VIF). The threshold value is VIF greater than 3.3, indicating common method bias (Hair, Ringle, and Sarstedt 2011). Consequently, VIF value

below 3.3 indicates that the model does not have any common method bias. Hence, Table 4.3 details the outer VIF values for all the constructs.

Table 4. 3 Outer and Inner VIF Values

Variable	Items	Outer VIF Values	Inner VIF Values
Facilitating Conditions	FC1	1.674	2.461
	FC2	1.642	
	FC3	1.561	
	FC4	1.221	
Financial Literacy	FL1	1.205	1.373
	FL2	1.526	
	FL3	1.471	
	FL4	1.308	
	FL5	1.373	
	FL6	1.275	
	FL7	1.361	
	FL8	1.455	
	FL9	1.257	
Hedonic Motivation	HM1	1.570	1.847
	HM2	1.874	
	HM3	1.573	
Collectivism	IC1	1.750	1.214
	IC2	1.867	
	IC3	1.740	
	IC4	1.980	
	IC5	1.444	
	IC6	1.407	
Power Distance	PD1	1.550	1.287
	PD2	1.317	
	PD3	1.783	
	PD4	1.617	

Performance Expectancy	PE1	1.998	2.075
	PE2	1.843	
	PE3	1.950	
	PE4	2.301	
Price Value	PV1	2.023	1.409
	PV2	2.204	
	PV3	1.476	
Behavioural Intention	BI1	2.665	NA
	BI2	2.787	
	BI3	1.754	

Table 4.3 clearly indicates that all the outer and inner VIF values are below the standard value of 3.3. The highest inner VIF value belongs to facilitating conditions with 2.461, while the lowest inner VIF value belongs to collectivism with 1.214. Overall, all the VIF values are below 3.3. Therefore, there are no multicollinearity issues among the constructs.

e) Mean and Standard Deviation Analysis

Descriptive statistics is used to describe the characteristics of the respondents in a study. Marshall and Jonker (2010) further supported this by stating that descriptive statistics enables the characterization of raw data obtained by analyzing the average measurement for the data. It is important to note that descriptive statistics are not able to determine causality like inferential statistics. However, descriptive statistics is an important step prior to carrying out inferential statistics through methods such as partial least equation structural equation modeling (PLS-SEM).

Determining the types of measures to conduct with descriptive statistics relies on the level of measurement for the constructs. There are three levels of measurement for a construct: nominal, ordinal and continuous. As this study utilizes Likert Scale for the measurement of the independent, dependent and moderating constructs, it is classified as a continuous variable. This is because the Likert scale indicates that there is rank

ordering with equal intervals (Marshall and Jonker 2010). Accordingly, mean and standard deviation are selected as the measure of central tendency and measure of dispersion respectively.

Mean is a powerful measure because it considers the score of each variable in the estimation of central tendency (McHugh 2003). In the Likert scale, respondents are required to select one answer ranging from 1 which indicates Strongly Disagree to 5 which indicates Strongly Agree. The greater the value of the mean, the more positive the perception of the questionnaire respondents have towards the construct. As the maximum value is 5, the midpoint value for mean is 2.5. Values above 2.5 indicates that respondents have a positive perception of the variable.

On the other hand, standard deviation represents the measure of dispersion. In simpler words, it investigates the variability of scores among the respondents, which illustrates how different cases are dispersed across all the constructs. It also measures the degree of variation from the mean. The lower the value of standard deviation, the closer the distance to the mean. Conversely, the higher the value of standard deviation, the further is the distance to the mean (Hair et al. 2010). Table 4.4 displays the mean and standard deviation of items for every construct.

Table 4. 4 Mean and Standard Deviation Analysis

Descriptive Statistics			
	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
PE1	343	4.318	0.706
PE2	343	4.032	0.796
PE3	343	4.385	0.699
PE4	343	4.181	0.766
FC1	343	3.988	0.684
FC2	343	3.959	0.724
FC3	343	4.032	0.694
FC4	343	3.927	0.793
HM1	343	3.656	0.874
HM2	343	3.895	0.726

HM3	343	4.023	0.757
PV1	343	3.729	0.823
PV2	343	3.767	0.732
PV3	343	3.773	0.792
FL1	343	3.420	0.936
FL2	343	3.904	0.820
FL3	343	4.079	0.759
FL4	343	4.090	0.820
FL5	343	4.090	0.835
FL6	343	4.152	0.765
FL7	343	3.612	0.923
FL8	343	4.102	0.771
FL9	343	3.566	0.921
BI1	343	4.181	0.673
BI2	343	4.134	0.721
BI3	343	3.930	0.828
PD1	343	4.239	0.698
PD2	343	3.851	0.957
PD3	343	4.207	0.718
PD4	343	3.994	0.806
IC1	343	3.971	0.802
IC2	343	3.883	0.867
IC3	343	3.907	0.815
IC4	343	3.904	0.794
IC5	343	3.434	0.965
IC6	343	3.915	0.788

From Table 4.4, the mean value ranges from 3.420 to 4.385. The highest mean value is 4.385 which belongs to Performance Expectancy 3. Meanwhile, the lowest mean value is 3.420 which belongs to Financial Literacy 1. As all the mean values are above the midpoint of 2.5, this indicates that respondents have a positive perception towards digital financial services.

Meanwhile, the standard deviation values range from 0.673 to 0.965. The highest standard deviation value is 0.965 which belongs to Collectivism 5. The lowest value is 0.673 which belongs to Behavioral Intention 1. From the values in the table, it shows that standard deviation values are low. This indicates that the scores are closer to the average mean. Hence, this indicates that most of the respondents have a positive perception towards digital financial services.

f) Demographic Profile

During this research, a total of 343 valid responses were utilized for data analysis. The respondents of these questionnaires consist of low-income households with different demographic profile. In the following section, details on the demographic profile and digital financial services experience are discussed. Consequently, the descriptive statistics for each construct in the conceptual framework of this study are provided.

Table 4.5 presents the details of the demographic profile for the questionnaire's respondents.

Table 4. 5 Demographic Profile of Respondents

Variable		Frequency (N)	Percentage (%)
Gender	Male	118	34.4
	Female	225	65.6
Age	18-25 years old	69	20.1
	26-33 years old	151	44
	34-41 years old	70	20.4
	42-49 years old	31	9
	50 years old and above	22	6.4
State of origin	Sarawak	333	97.1
	Other than Sarawak	10	2.9
Ethnicity of respondents	Bumiputera	294	85.7
	Non-Bumiputera	49	14.3
Highest educational qualification	Primary school education	12	3.5
	Secondary school education	103	30
	Diploma	111	32.4
	Undergraduate	102	29.7
	Postgraduate and above	15	4.4
Types of digital financial services used	Mobile banking	219	63.8
	Internet banking	246	71.7
	Automated Teller Machines (ATMs)	247	72
	Point of sale (POS terminals)	54	15.7
	Electronically enabled cards (Debit/Credit Cards)	215	62.7
	Others	0	100
	I do not use digital financial services	7	2
Frequency of use for digital financial services	Once daily	48	14
	2-5 times daily	92	26.8
	6-10 times daily	19	5.5
	More than 10 times daily	5	1.5
	Once in a week	112	32.7
	Once in a month	60	17.5
	I do not use digital financial services	7	2
Period of use for digital financial services	Less than 1 year	20	5.8
	1 to 2 years	43	12.5
	3 to 4 years	88	25.7
	5 to 6 years	55	16
	More than 6 years	130	37.9
	I do not use digital financial services	7	2

In Table 4.5, majority of the respondents are females as 225 respondents make up 65.6% of the sample size. Meanwhile, the majority age group for the respondents are 26-33 years old which consists of 44% of the sample size. In this study, 333 respondents are from Sarawak. This makes up 97.1% of the sample size. On the other hand, majority of the respondents in this study are Bumiputera. 294 respondents are Bumiputera, which makes up 85.7% of the sample size. In Malaysia, the term

Bumiputera is used to describe Malay, Orang Asli or indigenous people. Based on the information in Table 4.5, majority of respondents in this study have a diploma. From the statistics, 111 respondents have a diploma which make up 42.4% of the sample size. There are multiple types of digital financial services that the respondents have used. From the statistics in Table 4.5, majority of the respondents have used Automated Teller Machines (ATMs).

An important finding from the demographic profile regarding the highest education qualification shows that 29.7% of the respondents are undergraduates. From this finding, this implies that graduating with a degree does not imply that their economic conditions will improve. As of 2018, DOSM reported that Malaysia has a total of 4.96 million graduates. Despite this, only 96.1% of the graduates are employed as part of the labour force. On the contrary, there are still 3.9% of graduates which are unemployed. This totals to 162,000 graduates being unemployed (DOSM 2019b).

From the previous statistics, despite being graduates, they still belong to the low-income or B40 group. The undergraduates being part of the B40 or low-income households could possibily point to the lack of employability of Malaysian graduates and earning lower income in their jobs. The lack of employability refers to the gap between the skills that graduates possess and the industry expectation (Mohamad et al. 2018).

For the frequency of use for digital financial services, majority of the respondents use them from once daily to more than 10 times daily, which make up 47.8% of the respondents. Meanwhile, majority of the respondents have used digital financial services for less than 6 years, which make up 60% of the respondents. In the next section, details on the findings using the Partial Least Squares Structural Equation Modelling (PLS-SEM) method are provided.

4.4 Partial Least Squares Structural Equation Modelling

This study utilizes the Partial Least Squares Structural Equation Modelling (PLS-SEM) method to evaluate the conceptual framework. The software used for this study is the SmartPLS 3.0. There are three main steps to conducting research using PLS-SEM. Firstly, the measurement model assessment is conducted where the relationship between the latent variables and indicators in the outer model is assessed. The measurement model assessment is divided into two subsections which are reflective and formative measurement model assessment. Secondly, the structural model is assessed where the relationship between latent variables in the inner model are assessed. Thirdly, the moderator analysis assessment is conducted where the moderating relationship between the moderating variables and latent variables are investigated. Hence, the following subsections detail the process thoroughly.

4.5 Measurement Model Assessment

4.5.1 Reflective Measurement Model Assessment

To begin with the PLS-SEM analysis, the reflective measurement model is first assessed. There are three main steps in this process which are internal consistency reliability, convergent validity and discriminant validity. In this research, nearly all constructs are reflective constructs except for financial literacy. Explanation on the justification for the classification of constructs as reflective constructs is detailed in Chapter 3. The subsequent subsections explain the steps and findings for the reflective measurement model in detail.

a) Internal Consistency Reliability

Internal consistency reliability is assessed through composite reliability. This method of measuring internal consistency reliability is recommended by Gefen, Straub, and Boudreau (2000). There are two threshold values for composite reliability depending on the type of research. Firstly, if the research is an exploratory study values above 0.60 are accepted. Secondly, studies apart from exploratory research require values between 0.70 to 0.90.

b) Convergent Validity

In the next step, convergent validity which is the extent that individual indicators reflect a construct compared to the indicators of other constructs is assessed (Urbach and Ahlemann 2010). Firstly, the outer loadings for each indicator are assessed. The threshold value for outer loadings is that it must either be equal to or greater than 0.5, provided that the AVE scores are above 0.5 (Byrne 2016).

Table 4. 6 Factor Loadings, Composite Reliability and Average Variance Extracted for Reflective Variables

Variables	Indicators	Factor Loadings	CR	AVE
Behavioral Intention	BI1	0.906	0.914	0.781
	BI2	0.908		
	BI3	0.835		
Facilitating Conditions	FC1	0.829	0.841	0.574
	FC2	0.831		
	FC3	0.780		
	FC4	0.557		
Hedonic Motivation	HM1	0.794	0.872	0.695
	HM2	0.858		
	HM3	0.846		

Collectivism	IC1	0.568	0.850	0.489
	IC2	0.618		
	IC3	0.745		
	IC4	0.810		
	IC5	0.728		
	IC6	0.700		
Power Distance	PD1	0.801	0.853	0.593
	PD2	0.737		
	PD3	0.788		
	PD4	0.752		
Performance Expectancy	PE1	0.850	0.895	0.682
	PE2	0.796		
	PE3	0.789		
	PE4	0.866		
Price Value	PV1	0.832	0.884	0.718
	PV2	0.884		
	PV3	0.825		

Table 4.6 shows the values for composite reliability of each construct. The composite reliability for the variables in this study range from 0.841 to 0.914. The value of 0.914 belongs to behavioral intention. Although the value of 0.914 exceeds the threshold value of 0.90, this composite reliability is still acceptable as Diamantopoulos et al. (2012) and Drolet and Morrison (2001) stated that only values of 0.95 or higher are problematic as this shows that the items are redundant which negatively impacts the construct validity. As the composite reliability is 0.914, it is still acceptable, and the items are retained. From these results, it can be concluded that the internal consistency reliability of the constructs in the conceptual framework of this study is satisfactory.

Next is the indicator reliability. The factor loadings of the indicators range from 0.557 to 0.908. Therefore, these factor loadings are acceptable according to the threshold values by Byrne (2016).

The next measure is convergent validity. The unit of measurement used is the Average Variance Extracted (AVE). Hence, the threshold value is the AVE must be equal to or

greater than 0.50 for an indicator to achieve adequate convergent validity (Byrne 2016). From Table 4.6, the AVE values for all constructs range from 0.489 to 0.781. From Table 4.6, the values meet the threshold value of 0.5 except for Collectivism with an AVE value of 0.489. However, Malhotra (2010) stated that in the case where the AVE value is below 0.5, but, with composite reliability greater than 0.6, the construct can be concluded to have adequate convergent validity on the basis of composite reliability alone. Furthermore, the AVE is considered as a more conservative and strict measurement of the validity for the measurement model. In a study conducted by Lam (2012), the AVE results for several constructs did not meet 0.5. However, based on composite reliability alone, the constructs were concluded to have established convergent validity. Considering this, all the reflective constructs in this study are concluded to have established convergent validity.

c) Discriminant Validity

The last step in reflective measurement model assessment is discriminant validity. This is defined as the extent to which a construct measures distinct concepts (Ramayah et al. 2018). Consequently, there are three steps to measure discriminant validity which are cross loadings, Fornell and Larcker Criterion and Heterotrait-Monotrait Ratio of Correlations (HTMT). The following explains in brief about the measures for discriminant validity. For cross loadings, it is expected that the loadings of the assigned latent variable should be the highest compared to the loadings on other latent variables. Next, Fornell and Larcker criterion posits that the AVE of a latent variable should be higher compared to the squared correlation between the latent variable and other variables. Lastly, HTMT measures the 'ratio of correlations within constructs to correlation between constructs (Ramayah et al. 2018). There are two threshold values for HTMT which are values greater than 0.85 (Kline 2011) or 0.90 (Gold, Malhotra, and Segars 2001) indicating possible issues with discriminant validity. As each of the steps under discriminant validity has been explained, the following sections detail the results for each step.

i. Cross Loadings

The first step to assess discriminant validity is through cross loadings. The threshold value for this step is that the loadings of the latent variable itself should be higher compared to the loadings of the latent variable on other latent variables. Moreover, the difference between loadings for different variables should not be less than 0.1 (Chin 1998a; Snell and Dean 1992). Table 4.7 shows the cross-loading values for all the constructs.

Table 4. 7 Cross Loadings Values

	Behavioral Intention to Accept Digital Financial Services (BI)	**Facilitating Conditions (FC)**	**Hedonic Motivation (HM)**	**Collectivism (C)**	**Power Distance (PD)**	**Performance Expectancy (PE)**	**Price Value (PV)**
BI1	**0.906**	0.538	0.479	0.211	0.264	0.579	0.372
BI2	**0.908**	0.523	0.450	0.189	0.266	0.544	0.347
BI3	**0.835**	0.465	0.458	0.183	0.254	0.491	0.384
FC1	0.500	**0.829**	0.523	0.135	0.191	0.662	0.318
FC2	0.518	**0.831**	0.501	0.154	0.202	0.555	0.338
FC3	0.419	**0.780**	0.507	0.169	0.181	0.481	0.477
FC4	0.250	**0.557**	0.335	0.307	0.192	0.333	0.413
HM1	0.390	0.452	**0.794**	0.183	0.156	0.409	0.366
HM2	0.412	0.533	**0.858**	0.113	0.193	0.475	0.393
HM3	0.494	0.564	**0.846**	0.150	0.204	0.484	0.412
IC1	0.108	0.171	0.120	**0.568**	0.316	0.103	0.197
IC2	0.096	0.124	0.135	**0.618**	0.314	0.089	0.115
IC3	0.157	0.167	0.093	**0.745**	0.228	0.164	0.039

IC4	0.194	0.168	0.120	**0.810**	0.326	0.162	0.053
IC5	0.177	0.168	0.153	**0.728**	0.187	0.098	0.099
IC6	0.160	0.150	0.137	**0.700**	0.342	0.159	0.035
PD1	0.256	0.258	0.223	0.260	**0.801**	0.231	0.184
PD2	0.248	0.157	0.194	0.359	**0.737**	0.140	0.142
PD3	0.201	0.189	0.120	0.264	**0.788**	0.180	0.063
PD4	0.192	0.144	0.128	0.334	**0.752**	0.176	0.110
PE1	0.555	0.596	0.479	0.186	0.242	**0.850**	0.323
PE2	0.487	0.557	0.458	0.229	0.177	**0.796**	0.287
PE3	0.429	0.510	0.390	0.099	0.198	**0.789**	0.241
PE4	0.532	0.605	0.478	0.102	0.166	**0.866**	0.320
PV1	0.290	0.400	0.355	0.122	0.132	0.280	**0.832**
PV2	0.365	0.421	0.390	0.077	0.206	0.323	**0.884**
PV3	0.387	0.413	0.439	0.094	0.091	0.302	**0.825**

From Table 4.7, the loadings of indicators on each assigned latent variable is the highest in comparison to loadings for other latent variables. Moreover, it was confirmed that the difference between loadings for different variables are all more than 0.1. Hence, these results confirm that the discriminant validity through cross loadings has been satisfied.

ii. Fornell and Larcker Criterion

The second step under discriminant validity is the Fornell and Larcker criterion. The threshold value for this step is that the square root of AVE for a construct should be higher compared to the correlations between the construct and other constructs (Ramayah et al. 2018). From past research, the use of Fornell and Larcker and cross loadings as methods to test discriminant validity has been shown to provide unreliable results in common research situations. Therefore, the next method which is the Heterotrait-Monotrait Ratio of Correlations (HTMT) is recommended as the superior approach to measure discriminant validity (Henseler, Ringle, and Sarstedt 2015).

Table 4.8 shows the Fornell and Larcker criterion results for all the constructs in this study.

Table 4. 8 Fornell & Larcker Criterion Results

	BI	C	FC	HM	PE	PD	PV
Behavioral Intention to Accept Digital Financial Services (BI)	**0.884**						
Collectivism (C)	0.220	**0.699**					
Facilitating Conditions (FC)	0.577	0.225	**0.758**				
Hedonic Motivation (HM)	0.523	0.177	0.623	**0.833**			
Performance Expectancy (PE)	0.610	0.188	0.689	0.549	**0.826**		
Power Distance (PD)	0.296	0.395	0.247	0.223	0.237	**0.770**	
Price Value (PV)	0.416	0.113	0.486	0.470	0.357	0.168	**0.847**

Based on the results in Table 4.8, the square root of AVE for each latent variable is higher compared to the correlation on the off-diagonal. Therefore, these results confirm that the discriminant validity through the Fornell and Larcker criterion has been satisfied.

iii. Heterotrait-Monotrait Ratio of Correlations (HTMT)

The third and final step to assess discriminant validity is the Heterotrait-Monotrait Ratio of Correlations (HTMT). There are two threshold values for this step. Values above 0.85 (Kline 2011) and 0.90 (Gold, Malhotra, and Segars 2001) indicate that there may be issues with discriminant validity. Table 4.9 shows the HTMT results for all the constructs.

Table 4. 9 HTMT Results

	BI	C	FC	HM	PE	PD	PV
Behavioral Intention to Accept Digital Financial Services (BI)							
Collectivism (C)	0.256						
Facilitating Conditions (FC)	0.693	0.331					
Hedonic Motivation (HM)	0.633	0.228	0.799				
Performance Expectancy (PE)	0.711	0.223	0.838	0.670			
Power Distance (PD)	0.357	0.518	0.325	0.275	0.291		
Price Value (PV)	0.494	0.161	0.656	0.584	0.428	0.205	

Based on the findings in Table 4.9, all the HTMT values are below 0.85. Additionally, the confidence interval bias corrected is also reported under HTMT. This method utilizes the bootstrapping feature in the SmartPLS software and is also known as the HTMT inferential. Table 4.10 shows the corresponding results for the confidence interval bias corrected.

Table 4. 10 Confidence Interval Bias Corrected Results

	5%	95%
Collectivism (C)	-0.048	0.092
Facilitating Conditions (FC)	0.021	0.227
Hedonic Motivation (HM)	0.033	0.228
Performance Expectancy (PE)	0.229	0.427
Power Distance (PD)	0.006	0.153
Price Value (PV)	0.036	0.190

From Table 4.10, the value of 1 does not appear between the interval for confidence interval bias corrected. In conclusion, these results confirm that the discriminant validity through the Heterotrait-Monotrait Ratio of Correlations criterion and confidence interval bias corrected has been satisfied.

4.5.2 Formative Measurement Model Assessment

Once the reflective measurement model assessment has been completed, the formative measurement model assessment is conducted. This section proceeds to present the findings of data analysis for the only formative construct in this study, which is financial literacy. Justification for the classification of this construct as a formative construct can be found in Chapter 3. Under the formative measurement model, there are two main steps. The first step is multicollinearity issue assessment. In formative measurement models, high multicollinearity is not expected because the indicators are essentially non-interchangeable. The presence of high multicollinearity can negatively impact weight estimations and statistical significance (Ramayah et al. 2018). The second step is to assess the significance and relevance of the formative indicators. In this step, values of outer weights are obtained through a process called bootstrapping. This step is vital because it measures the relative contribution of each formative

indicators to the formation of the latent variable. Hence, the following subsections present the threshold values and findings in detail.

a) Multicollinearity Issue Assessment

In this step, the multicollinearity between indicators is assessed. Multicollinearity issues are problematic for formative constructs because they can increase standard errors which negatively impacts the statistical significance generated. Hence, the measurement criteria for this step is the Variance Inflation Factor (VIF). There are two threshold values for this step. Firstly, VIF values of 5 or above indicates a potential multicollinearity problem (Hair, Ringle, and Sarstedt 2011). Secondly, VIF values of 3.3 or above indicates a potential multicollinearity problem (Diamantopoulos and Siguaw 2006). The following Table 4.11 shows the outer VIF values results.

Table 4. 11 Outer VIF values Results

Variable	Indicators	Outer VIF values
Financial Literacy	FL1	1.205
	FL2	1.526
	FL3	1.471
	FL4	1.308
	FL5	1.373
	FL6	1.275
	FL7	1.361
	FL8	1.455
	FL9	1.257

From Table 4.11, the VIF values are all below 3.3 which means that there are no multicollinearity issues among the formative indicators.

b) Significance and Relevance of Formative Indicators

The second and final step in formative measurement model assessment is investigating the significance and relevance of formative indicators. In this final stage, the measure used is outer weights. According to Hair et al. (2017), outer weights is an important measure because it measures the contribution of each indicator towards the formation of the construct. The outer weights from this step are obtained using the bootstrapping technique. The threshold value for an outer weight to be considered as significant is to have values above 0.50. However, there are several other considerations that must be taken before a researcher deletes the indicator. For instance, if the outer weight is non-significant, but outer loading is high (above 0.50), the formative indicator should be retained. If both outer weight and outer loading are non-significant (below 0.50), then the formative measure should be deleted with consideration for theoretical and statistical significance. Furthermore, a formative measure can be retained even if the statistical results do not support retaining it, given that there is a strong theory-based justification to retain the indicator. Therefore, Table 4.12 indicates the outer weights for formative indicators.

Table 4. 12 Outer Weights Summary for Formative Indicators

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
FL1 -> Financial Literacy (FL)	0.014	0.006	0.106	0.130	0.448
FL2 -> Financial Literacy (FL)	0.050	0.058	0.114	0.437	0.331
FL3 -> Financial Literacy (FL)	0.442	0.429	0.124	3.574	0.000
FL4 -> Financial Literacy (FL)	0.112	0.094	0.128	0.872	0.192
FL5 -> Financial Literacy (FL)	-0.123	-0.113	0.115	1.074	0.142

FL6 -> Financial Literacy (FL)	0.422	0.397	0.125	3.368	0.000
FL7 -> Financial Literacy (FL)	-0.014	-0.007	0.124	0.116	0.454
FL8 -> Financial Literacy (FL)	0.431	0.415	0.111	3.902	0.000
FL9 -> Financial Literacy (FL)	0.115	0.112	0.122	0.942	0.173

In Table 4.12, all the outer weights do not meet the threshold value of above 0.50. In this case, Hair (2017) stated that the next step is to assess the p-values of the formative constructs. A p-value of less than 0.05 indicates that the construct is significant although the outer weights are not significant. From Table 4.12, the constructs FL3, FL6 and FL8 are found to be significant as their p-values are less than 0.05. This method is known as the relative contribution method. As there are still remaining indicators that do not meet both the threshold values for outer weights and p-values, the next step is to assess the outer loadings results. Table 4.13 summarizes the outer loadings for the formative indicators.

Table 4. 13 Outer Loadings Summary for Formative Indicators

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
FL1 -> Financial Literacy (FL)	0.261	0.253	0.097	2.697	0.004
FL2 -> Financial Literacy (FL)	0.446	0.426	0.100	4.454	0.000
FL3 -> Financial Literacy (FL)	0.715	0.685	0.088	8.142	0.000
FL4 -> Financial Literacy (FL)	0.506	0.478	0.103	4.896	0.000
FL5 -> Financial Literacy (FL)	0.364	0.347	0.106	3.433	0.000
FL6 -> Financial Literacy (FL)	0.692	0.664	0.080	8.663	0.000
FL7 -> Financial Literacy (FL)	0.337	0.324	0.104	3.239	0.001
FL8 -> Financial Literacy (FL)	0.736	0.702	0.072	10.211	0.000
FL9 -> Financial Literacy (FL)	0.367	0.356	0.107	3.431	0.000

In this step, the threshold values are outer loadings where they must be higher than 0.50 and the t-value results must be more than 1.645. From the remaining indicators, only FL4 meets the threshold values with 0.506 outer loadings and 4.896 t-value. Hence, this indicator is retained. The remaining indicators after this step are FL1, FL2, FL5, FL7, and FL9. Although these indicators do not meet any of the threshold values in the formative measurement model assessment, these indicators are still retained. The reason for retaining these indicators is because Ramayah et al. (2018) stated that the removal of formative indicators on the basis of bootstrap outer loadings may cause poor content validity. Furthermore, these indicators are retained because they have strong theoretical evidence. The financial literacy indicators were developed based on the definition from OECD (2011). Three main elements were selected to measure financial literacy: financial knowledge, financial behavior and financial attitudes.

Furthermore, the financial literacy indicators were also developed based on the Big Three questions by Mitchell and Lusardi (2015) which has been widely used to measure financial literacy around the world. As the remaining indicators were developed based on theoretically driven aspects, the remaining financial literacy indicators were retained. This is further supported by Ramayah et al. (2018) which stated that formative indicators can be retained if there is strong conceptual support for the indicators. Furthermore, the financial literacy indicators are the contribution of the study denoting that retaining these items allow for further testing in different context that may validate its significance. Therefore, no formative indicators are removed from the measurement model and the retaining of each indicator has been justified through statistics and theory-driven conceptualization.

4.6 Structural Model Assessment

As the measurement model assessment has been completed, the second step in the PLS-SEM analysis is the structural model assessment. There are five steps in conducting the structural model assessment: a) multicollinearity issues assessment, b) significance and relevance of structural model relationships, c) coefficient of determination R^2, d) effect size (f^2) and e) predictive relevance. The following subsections show the findings from the data analysis.

4.6.1 Multicollinearity Issues Assessment

The first step in structural model assessment is multicollinearity issues assessment. In the reflective measurement model, the discriminant validity was assessed. However, Kock and Lynn (2012) stated that measuring discriminant validity alone is insufficient because lateral multicollinearity issues may mask the strong causal effect in the model. The threshold values for this step follow the same values for the criteria set in the multicollinearity issues assessment for formative measurement model. Hence, there are two threshold values for this step. Firstly, VIF values equal to or higher than 3.3 indicate a potential multicollinearity issue (Diamantopoulos and Siguaw 2006). Secondly, VIF values equal to or higher than 5 indicate a potential multicollinearity issue (Hair, Ringle, and Sarstedt 2011). The results of the analysis are presented in Table 4.14.

Table 4. 14 Inner VIF Values Summary

	Behavioral Intention to Accept Digital Financial Services (BI)
Behavioral Intention to Accept Digital Financial Services (BI)	
Collectivism (C)	1.214
Facilitating Conditions (FC)	2.461
Financial Literacy (FL)	1.373
Hedonic Motivation (HM)	1.847
Performance Expectancy (PE)	2.075
Power Distance (PD)	1.287
Price Value (PV)	1.409

From Table 4.14, the inner VIF values for all the independent variables are less than 3.3 and 5. Therefore, it indicates that there are no multicollinearity issues in the structural model (Hair et al. 2017).

4.6.2 Significance and Relevance of Structural Model Relationships

The second step in structural model assessment is investigating the significance and relevance of the structural model relationships. In this step, the bootstrapping technique is conducted. This is because PLS is a non-parametric technique which does not make any assumptions about data distribution (Ramayah et al. 2018). Therefore, this can impact the estimation of t-values as it can either be inflated or deflated. The bootstrapping procedure is key towards solving this issue because it takes 5000 subsamples from the original sample to provide t-values in determining the significance testing of the structural paths. In this step, the measure is path coefficients which have a standardized value from -1 to +1. Accordingly, values close to -1 indicate strong negative relationships. Conversely, values close to +1 signify strong positive relationships.

Most importantly, the findings from this step can either confirm or reject the hypothesis developed for the study. From the process of bootstrapping, values for path coefficient, t-values and p-values are obtained.

Discussion on the results of hypotheses testing are provided in section 4.11 of this chapter.

a) Coefficient of Determination (R^2)

The second step in structural model assessment is coefficient of determination. Under this step, the predictive accuracy of the model is assessed using the determination score which is symbolized as R^2. This measure predicts the predictive accuracy of the model by combining the effect of exogenous variables on endogenous variables. The range of value for this measure is from 0 to 1. Accordingly, the greater the value, the greater the predictive accuracy. Based on past literature, there are three recommended values

for the R^2. For each threshold value, there are three classifications: substantial, moderate or weak. Therefore, the first threshold values recommended by Cohen (1988) are 0.26, 0.13 and 0.02. Secondly, Chin (1998) recommended 0.67, 0.33 and 0.19. Lastly, Hair et al. (2017) recommended values of 0.75, 0.50 and 0.25 respectively.

b) Effect Size (f^2)

The third step is assessing the effect size of predictor constructs. This is done by using Cohen's f^2 which measures the impact of a predictor variable on an endogenous construct (Cohen 1988). In simpler words, it investigates the contribution of an exogenous construct on an endogenous construct in terms of R^2. The threshold values recommended by Cohen (1988) are 0.35, 0.15 and 0.02 which are classified as substantial, medium and small effect size respectively.

c) Predictive Relevance

The last step in structural model assessment is investigating predictive relevance of the path model. The measure for this step is Stone Geisser Q^2 Predictive relevance was developed by Geisser (1974) and Stone (1974). This process assesses predictive relevance through the blindfolding procedure. This procedure systematically deletes and predicts every data point of indicators in the reflective measurement model of endogenous constructs. The threshold value for this step is that the resulting Q^2 value should be greater than 0 for the exogenous construct to be considered to have acceptable predictive relevance (Fornell and Cha 1994).

4.7 Moderator Analysis Assessment

In the moderator analysis assessment, the method being used in this study is the two-stage approach. This method of analysis was first created by Chin, Marcolin, and Newsted (2003). The use of the two-stage approach is most suitable when any of the constructs are classified as a formative construct (Henseler and Chin 2010). It does not

matter if either the exogenous or endogenous is a formative construct. The most important reason for using a two-stage approach as stated by Hair et al. (2017) and Henseler and Chin (2010), is when the aim of the analysis is to investigate whether the moderator exerts a significant effect on the relationship. In fact, the use of the two-stage approach yields more accurate estimates and has a higher statistical power (Ramayah et al. 2018).

a) Change in R^2

In the moderator analysis, Ramayah et al. (2018) stated that analyzing the change in R^2 is an important task. The new R^2 must be assessed after the moderating interaction is added to the path model.

b) Effect Size (f^2)

The next step in moderator analysis is to analyze the effect size or f^2. In this step, the threshold value follows the suggestion by Kenny (2016) which stated that the values of 0.005, 0.01 and 0.025 are classified as small, medium and large effect size respectively.

4.8 Results of Hypotheses Testing

In the final step for data analysis, the proposed hypotheses in this research are tested. The method of assessment to test a hypothesis is through path coefficient. There are three threshold values suggested by Hair et al. (2017). Firstly, p value must be lesser than 0.01 or 0.001 and t value is more than 2.33 for one-tailed or more than 2.58 for two-tailed. Secondly, p value must be lesser than 0.05 and t value is more than 1.645 for one-tailed or more than 1.96 for two-tailed. Thirdly, p value must be lesser than 0.10 and t value is more than 1.28 or more than 1.96 for two-tailed. Therefore, this study adopts the threshold value where p value must be lesser than 0.05 and t value more than 1.645.

Apart from the path coefficient, confidence interval bias is also reported. According to Ramayah et al. (2018), the reporting of t-values and p-values is insufficient for a dissertation. Hence, the confidence interval bias must also be reported because it indicates the precision of the estimate and the uncertainty of the estimate. If 0 does not appear between the lower and upper bound of confidence interval bias, it can be concluded that there is a significant result. Based on an analysis of all the hypotheses proposed in this research, it was found that nearly all the hypotheses are supported with the exception for Hypothesis 6 and 7. The following section summarizes the results for each hypothesis. Table 4.15 summarizes all the structural measurement findings.

H1: There is a positive relationship between performance expectancy (PE) and the behavioral intention (BI) to accept digital financial services.

Performance expectancy (PE) strongly and positively influences the behavioral intention (BI) to accept digital financial services. H1 is supported because it has the following values, which are $\beta = 0.307$, t-value = 4.749, p-value = <0.001, and 95% confidence interval bias = [0.229; 0.427].

H2: There is a positive relationship between facilitating conditions (FC) and the behavioral intention (BI) to accept digital financial services

Facilitating condition (FC) strongly and positively influences the behavioral intention (BI) to accept digital financial services. H2 is supported because it has the following values, which are $\beta = 0.133$, t-value = 2.097, p-value = 0.018, and 95% confidence interval bias = [0.021; 0.227].

H3: There is a positive relationship between hedonic motivation (HM) and the behavioral intention (BI) to accept digital financial services

Hedonic motivation (HM) strongly and positively influences the behavioral intention (BI) to accept digital financial services. H3 is supported because it has the following values, which are β = 0.127, t-value = 2.189, p-value = 0.015, and 95% confidence interval bias = [0.033; 0.228].

H4: There is a positive relationship between price value (PV) and the behavioral intention (BI) to accept digital financial services

Price value (PV) strongly and positively influences the behavioral intention (BI) to accept digital financial services. H4 is supported because it has the following values, which are β = 0.109, t-value = 2.190, p-value = 0.014, and 95% confidence interval bias = [0.036; 0.189].

H5: There is a positive relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Financial literacy (FL) strongly and positively influences the behavioral intention (BI) to accept digital financial services. H5 is supported because it has the following values, which are β = 0.186, t-value = 3.838, p-value = <0.001, and 95% confidence interval bias = [0.087; 0.239].

H6: Power Distance (PD) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Power Distance (PD) does not moderate the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services. H6 is not supported because it has the following values, which are β = 0.039 and t-value = 0.949. The R^2 change from 0.494 to 0.498 also indicates that with the addition of two interaction terms, the R^2 has changed about 0.4% (additional variance). From this value, there is very minimal change to the additional variance. Furthermore, the f square of this moderating construct is 0.002 which is classified as a very small effect

size. This hypothesis is not supported because the t-value does not meet the threshold value of 1.645.

H7: Collectivism (C) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Collectivism (C) does not moderate the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services. H6 is not supported because it has the following values, which are β = -0.064 and t-value = 1.474. The R^2 change from 0.494 to 0.498 also indicates that with the addition of two interaction terms, the R^2 has changed about 0.4% (additional variance). From this value, there is very minimal change to the additional variance. Furthermore, the f square of this moderating construct is 0.007 which is classified as a small effect size. The hypothesis is not supported as the standard beta is negative and the t-value does not meet the threshold of 1.645.

Table 4. 15 Summary of Hypotheses Testing Results

No	Relationship	Path Coefficient (β)	Standard Error	t-value	p-value	5% Confidence Interval	95% Confidence Interval	Decision	R^2 before	R^2 after	f^2	Q^2
H1	PE -> BI (+)	0.307	0.065	4.749***	0.000	0.229	0.427	Supported	0.494	0.498	0.090	0.369
H2	FC -> BI (+)	0.133	0.063	2.097*	0.018	0.021	0.227	Supported			0.014	
H3	HM -> BI (+)	0.127	0.058	2.189*	0.015	0.033	0.228	Supported			0.017	
H4	PV -> BI (+)	0.109	0.050	2.190*	0.014	0.036	0.190	Supported			0.017	
H5	FL -> BI (+)	0.186	0.049	3.838***	0.000	0.087	0.239	Supported			0.050	

Note: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

From Table 4.15, the significance and relevance of the structural paths was first assessed using path coefficient. The path coefficient values in Table 4.15 indicate that the most important determinant in predicting digital financial services acceptance is performance expectancy as it has the highest path coefficient which is 0.307. The second most important determinant is financial literacy with a path coefficient of 0.186. This is followed by facilitating conditions (0.133), hedonic motivation (0.127) and price value (0.109).

The confidence interval bias is also reported for each construct. From the results, all the determinants show positively significant results because 0 does not appear in the interval bias.

The next step was to assess the coefficient of determination, denoted by R^2. From Table 4.15, the value of R^2 prior to the moderating interaction effect is 0.494. This means that the combined effect of the independent variables on the dependent variable is 0.494 or 49.4%. According to Chin (1998b), this effect can be considered as a moderate effect as it is more than 0.33.

Then, the effect size or f^2 was investigated. From Table 4.15, hedonic motivation (0.017) and price value (0.017) exhibit medium effect size. Meanwhile, performance expectancy (0.090), facilitating conditions (0.014) and financial literacy (0.050) exhibit small effect size respectively.

Following that, the predictive relevance, Q^2 is investigated. From Table 4.15, Q^2 is 0.369. Hence, this value meets the threshold value as it is greater than 0. Therefore, it can be concluded that exogenous constructs can adequately predict the endogenous constructs in this study as they achieve acceptable predictive relevance.

Once the structural model assessment has been completed, the moderator analysis assessment was conducted. The first step was to assess the change in R^2. Previously, R^2 without the interaction effect was 0.494. After the moderating interaction was added to the path model, the new R^2 is 0.498. This indicates that there is a R^2 change of 0.004. Therefore, this means that with the addition of one interaction term at a time, R^2 has changed about 0.4% (additional variance).

The final step in moderator analysis assessment is effect size f^2. The results for f^2 of the moderating constructs were obtained after the moderating interactions are added. From Table 4.15, the effect size for the interaction effects for collectivism is 0.007. Meanwhile, the effect size for power distance is 0.002. As the value of f^2 for collectivism is 0.007, this effect size can be classified as a small effect size. However, the effect size for power distance which is 0.002 does

not meet the threshold value of 0.005 by Kenny (2016). Therefore, the moderating construct of power distance is classified as having very small effect on the relationship between financial literacy and the behavioral intention to accept digital financial services. On the other hand, the moderating construct of collectivism is classified as having a small effect on the relationship between financial literacy and the behavioral intention to accept digital financial services.

Table 4. 16 F Square for Moderating Constructs

	Behavioral Intention to Accept Digital Financial Services (BI)
Behavioral Intention to Accept Digital Financial Services (BI)	
Collectivism * Financial Literacy	0.007
Power Distance * Financial Literacy	0.002

Table 4. 17 Results of Moderator Analysis

Hypothesis	Relationship	Path Coefficient	Standard Error	t-value	Decision
H6	Financial Literacy (FL) * Power Distance (PD) -> Behavioral Intention to Accept Digital Financial Services	0.039	0.042	0.949	Not supported
H7	Financial Literacy (FL) * Collectivism (C) -> Behavioral Intention to Accept Digital Financial Services	-0.064	0.044	1.474	Not supported

The path coefficient for the moderating variable of power distance is 0.039 with a standard error of 0.042. The t-value is 0.949. Although the path coefficient is positive, the t-value does not meet the threshold value of 1.645. From these two values, it can be concluded that the moderating hypothesis of H6 is not supported.

Meanwhile, the standard beta for the moderating variable of collectivism is -0.064 with a standard error of 0.044. The t-value is 1.474. It can be concluded that the moderating hypothesis of H7 is not supported because the path coefficient is negative, and the t-value does not meet the threshold value of 1.645.

4.9 Summary

This chapter provides results obtained from data analysis which was performed using SPSS and SmartPLS 3.0. Data analysis was conducted to investigate two main objectives of the research which are to identify the determinants of the behavioural intention to accept digital financial services (i.e.: performance expectancy, facilitating conditions, hedonic motivation, price value, and financial literacy) and to investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services (i.e.: power distance and collectivism). This section summarizes the key points from the data analysis.

First, results from preliminary data screening showed that data from this research meets the statistical assumptions required to carry out multivariate analysis. The preliminary data analysis tests conducted are missing data, statistical outliers, normality check and common method bias. A total of 37 questionnaires were removed due to missing data which resulted in 343 questionnaires utilized for data analysis. No statistical outliers were found. Normality check through skewness and kurtosis concluded that this research has a non-normal distribution. Therefore, this justifies the use of Partial Least Squares Structural Equation Modeling (PLS-SEM) as a statistical method for data analysis as it fulfills the non-normal data assumption. Common method bias was tested using Harman's single-factor test and full multicollinearity test. No multicollinearity issues were found.

Second, the measurement model assessment demonstrated satisfactory results as the constructs meet the threshold values of three main tests. In this research, nearly all indicators are reflective constructs except for financial literacy. Nearly all constructs met the composite reliability threshold of 0.70 to 0.90 except for behavioral intention with a value of 0.914. However, research by Diamantopoulos et al. (2012) and Drolet and Morrison (2001) supported the value. All AVE values were at least 0.5. Discriminant validity tests through three distinct tests which are cross loadings, Fornell and Larcker criterion and Heterotrait-Monotrait Ratio of Correlations (HTMT) all meet the threshold values confirmed that the indicators are unique from each other.

Third, the formative measurement model assessment is conducted on financial literacy, which is the only formative construct in the study. No multicollinearity issues were detected as the outer Variance Inflation Factor (VIF) values were all above 3.3. Besides, the significance and relevance

were measured using outer weights and outer loadings. Although some of the indicators did not meet the threshold values of both tests, the indicators were retained on the basis of strong theoretical evidence.

Third, the validation of the structural model yielded satisfactory results as the R^2 showed a moderate effect at 0.494 before moderation and 0.498 after moderation. Taken collectively with moderation results, 5 out of 7 hypotheses were supported. In particular, the roles of the two moderating hypotheses were not supported. Path coefficient values ranged from -0.064 to 0.307 and were significant at the minimum of 0.05 for p-value. Moreover, tests for predictive relevance (Q^2), with a threshold value of above 0 showed that predictive relevance was achieved with a value of 0.369. The assessment of effect size (f^2) yielded satisfactory results as values ranged from 0.014 to 0.090 for non-moderating hypotheses and 0.002 to 0.007 for moderating hypotheses.

Data analysis revealed that all the determinants in the framework have a positive relationship with digital financial services acceptance among low-income households in Miri, Sarawak. This is demonstrated through the non-moderating hypotheses measuring determinants of digital financial services acceptance which are H1, H2, H3, H4, and H5. Based on the path coefficient results, the most important determinant in predicting digital financial services acceptance was performance expectancy with a value of 0.307. This is followed by the second most important determinant which is financial literacy with a path coefficient of 0.186. As financial literacy is a contribution of this study, its role as a determinant for digital financial services acceptance has been empirically validated through this finding. Consequently, other determinants have also been empirically validated with the following path coefficient values: facilitating conditions (0.133), hedonic motivation (0.127), and price value (0.109).

However, the roles of the two moderating hypotheses H6 and H7 which measures the moderating roles of cultural dimensions were not supported in this research. In particular, H6 was not supported because the t-value does not meet the threshold value of 1.645 although the path coefficient is positive. Meanwhile, H7 was not supported because the path coefficient was negative at -0.064. Although the negative path coefficient signified an opposite relationship, the t-value which does not meet 1.645 implied that discussion of the opposite relationship is unnecessary. Instead, a discussion on the unsupported relationship is sufficient. Detailed discussions on the justifications for each hypothesis are provided in Chapter 5.

In summary, measurement model, structural model, and moderator analysis were conducted to test the hypotheses proposed in this study. The roles of non-moderating hypotheses which are H1 to H5 were supported. Meanwhile, the roles of moderating hypotheses which are H6 to H7 that measures the moderating roles of cultural dimensions were not supported. Hence, this section concludes Chapter 4 accordingly.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

5.1 Introduction

This chapter begins by providing a chapter summary for the thesis. Then, a recap of the results for the research hypotheses is done. Consequently, this chapter details the discussion of research results by explaining each hypothesis. Then, this chapter commences by detailing the theoretical and managerial implications of the study findings. Then, the limitations of study, recommendations and future research opportunities are stated. Lastly, the thesis is deduced in the conclusions section.

5.2 Summary of Research

In this research, there are two main objectives. The first is to identify the determinants of the behavioral intention to accept digital financial services. The second objective is to investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services. Hence, this study aims to identify the determinants of the behavioral intention to accept digital financial services with consideration for the moderating role of cultural dimensions.

This thesis begins with the introductory chapter which provides the background context for the study. Brief definitions of major terms in the study are also introduced. More importantly, this chapter details the importance of investigating digital financial services in Miri, Sarawak especially on low-income households. The problem statement of the study was laid out to establish the context of the study. Consequently, key elements such as the research questions, research objectives and research hypotheses are detailed. The two main objectives of this study are also presented. The significance of the study was also elaborated. The operational definition of key terms was also presented to improve understanding of key terms in relation to the context of the study. Lastly, the organization of dissertation was presented.

Chapter 2 is the literature review chapter. This chapter details in-depth information about key research areas in the study. The focus on bank-led digital financial services in this research was presented with detailed examples. Furthermore, low-income households were thoroughly defined

based on the Malaysian context. Then, a history of digital financial services acceptance in Malaysia was detailed. The chapter also provides literature support to justify the focus on low-income households in Malaysia. Similar studies conducted in Malaysia were also detailed. Additionally, the chapter details an overview of key technology acceptance theories. With consideration for all the technology acceptance theories, a justification for the selection of United Theory of Technology Acceptance (UTAUT2) and the Hofstede National Culture Theory was elaborated. Past studies examining financial literacy and digital financial services were detailed. Moving on, the moderating variables of this research which are power distance and collectivism were also detailed. As the key variables in this research were elaborated, the theoretical framework of the study was illustrated and laid out. At the end of the chapter, the literature gaps of the study were identified based on the literature review.

Chapter 3 presents the methodology of the study. First, the purpose of the study was recapped again to set the context for the methodology. The research type was defined as quantitative, cross-sectional, prospective and non-experimental. Next, the research design was presented through elements such as population, sample, data collection and data analysis. The sample inclusion criteria were also stated with justification provided for each criterion. More specifically, the inclusion criteria for this study are individuals of age 18 years old or older, married or unmarried, main income earner in the family, employed with income from labor or self-employment, lives in Miri City and has a household income from RM1,070 to RM3,459 per month. A sample size of 343 households was derived through the Krejcie and Morgan (1970) table. Then, a justification for the selection of Miri, Sarawak as a sampling location was done. The non-probability sampling methods utilized in this study are purposive and snowball sampling. The instrument utilized for data collection is self-administered questionnaire. The development of the questionnaire was detailed through the instrumentation section. Findings of the pilot test were presented through the internal reliability of the instrument which is Cronbach alpha. Control variables were elaborated. Moving on, data analysis methods using SPSS and PLS-SEM were elaborated in the subsequent sections. Towards the end of the chapter, ethical considerations and a summary of the chapter were presented.

The fourth chapter describes the findings of the data analysis. From the analysis, a summary of the hypotheses is detailed below in relation to the research questions.

RQ 1: What are the determinants of the behavioral intention to accept digital financial services?

RQ 2: How do cultural dimensions moderate financial literacy to the behavioral intention to accept digital financial services?

This fifth and concluding chapter details the summary of each chapter. Furthermore, the theoretical and practical implications of the study are also presented. Then, the limitations of the study are presented. Recommendations for future research are also provided. Lastly, a conclusion section summarizes the chapter.

5.3 Findings Summary

Findings from this research found that performance expectancy, facilitating conditions, hedonic motivation, price value and financial literacy have a positive relationship with the behavioral intention to accept digital financial services. Meanwhile, the moderating role of power distance on financial literacy and behavioral intention was not supported. Similarly, the moderating role of collectivism on financial literacy and behavioral intention was also not supported.

Table 5.1 summarizes the findings of the study and the results for each hypothesis. In total, there are seven hypotheses being investigated in this research. Five out of seven hypotheses are supported.

Table 5. 1 Summary of Research Hypotheses and Findings

Research Questions	Research Objectives	Research Hypotheses		Research Findings
RQ 1: What are the determinants of the behavioral intention to accept digital financial services?	**RO 1:** To identify the determinants of the behavioral intention to accept digital financial services	**H1**	There is a positive relationship between performance expectancy (PE) and the behavioral intention (BI) to accept digital financial services	This hypothesis is supported because it has the following values, which are β = 0.307, t-value = 4.749, p-value = <0.001, and 95% confidence interval bias = [0.229; 0.427].
		H2	There is a positive relationship between facilitating conditions (FC) and the behavioral intention (BI) to accept digital financial services	This hypothesis is supported because it has the following values, which are β = 0.133, t-value = 2.097, p-value = 0.018, and 95% confidence interval bias = [0.021; 0.227].
		H3	There is a positive relationship between hedonic motivation (HM) and the behavioral intention (BI) to accept digital financial services	This hypothesis is supported because it has the following values, which are β = 0.127, t-value = 2.189, p-value = 0.015, and 95% confidence interval bias = [0.033; 0.228].
		H4	There is a positive relationship between price	This hypothesis is supported because it has

			value (PV) and the behavioral intention (BI) to accept digital financial services	the following values, which are β = 0.109, t-value = 2.190, p-value = 0.014, and 95% confidence interval bias = [0.036; 0.189].
		H5	There is a positive relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services	This hypothesis is supported because it has the following values, which are β = 0.186, t-value = 3.838, p-value = <0.001, and 95% confidence interval bias = [0.087; 0.239].
RQ 2: How do cultural dimensions moderate financial literacy to the behavioral intention to accept digital financial services?	**RO 2:** To investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services	**H6**	Power Distance (PD) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services	This hypothesis is not supported because it has the following values, which are β = 0.039 and t-value = 0.949. The R^2 change from 0.494 to 0.498 also indicates that with the addition of one interaction term at a time, the R^2 has changed about 0.4% (additional variance). From this value, there is very minimal change to the additional variance. Furthermore, the f

				square of this moderating construct is 0.002 which is classified as a very small effect size.
		H7	Collectivism (C) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services.	This hypothesis is not supported because it has the following values, which are β = -0.064 and t-value = 1.474. The R^2 change from 0.494 to 0.498 also indicates that with the addition of one interaction term at a time, the R^2 has changed about 0.4% (additional variance). From this value, there is very minimal change to the additional variance. Furthermore, the f square of this moderating construct is 0.007 which is classified as a small effect size.

5.4 Discussion of Findings

This study seeks to reframe the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model to predict the behavioral intention of low-income households in Miri, Sarawak towards the acceptance of digital financial services. The UTAUT2 model is the most accepted theoretical model for consumers' adoption of technology, which was developed as an integrated framework of eight technology acceptance theories. This study utilizes four original determinants from the UTAUT2 model which are performance expectancy, facilitating conditions, hedonic motivation and price value. Apart from the determinants adopted from the UTAUT2 theory, another determinant which is financial literacy was incorporated into the theoretical framework. In this study, financial literacy is a key contribution to the study. This study is the first to propose financial literacy in the UTAUT2 framework. The role of financial literacy is especially more pronounced for low-income households as it equips the latter with basic financial knowledge which leads to an increased capacity to evaluate the right digital financial services for their needs (Atkinson and Messy 2013). Consequently, the role of financial literacy as a determinant for the acceptance of digital financial services has also been established. This is evident as it emerged as the second most important determinant for digital financial services acceptance.

Meanwhile, two moderating variables which are power distance and collectivism were obtained from the Hofstede National Culture Theory. This section discusses the individual results of each hypothesis in relation to the body of literature to contextualize the findings with the research questions and objectives.

With reference to the problem statement, this research seeks to answer several research questions which align with the research objectives and hypotheses proposed. The following details the findings for each research question, which will be explained through each research hypothesis.

H1: There is a positive relationship between performance expectancy (PE) and the behavioral intention (BI) to accept digital financial services

Aligned with the research objective 1 (RO1) which seeks to identify the determinants of the behavioral intention to accept digital financial services, hypothesis 1 proposes that there is a positive relationship between performance expectancy (PE) and the behavioral intention (BI) to accept digital financial services. With reference to Table 5.1, it was found that performance expectancy has a positive impact on the behavioral intention to accept digital financial services. The research findings show that the path coefficient is 0.307 with a p value of 0.000 ($p<0.001$), which confirm this hypothesis. From the path coefficient, it was found that performance expectancy is the most powerful determinant of digital financial services acceptance as it has the highest path coefficient. This finding is expected as Venkatesh et al. (2003) stated that performance expectancy is the strongest determinant regardless of whether the study is conducted in a voluntary or non-voluntary context.

The positive relationship between performance expectancy and behavioral intention also aligns with past studies which investigated the acceptance of digital finance (Baptista and Oliveira 2015; Martins, Oliveira, and Popovič 2014; Morosan and DeFranco 2016; Rahi, Ghani, and Ngah 2019; Savic and Pesterac 2019). Similarly, past studies examining the acceptance of mobile banking, as an aspect of digital financial services found that performance expectancy has a significantly positive impact on behavioral intention (Arshad, Mat, and Ibrahim 2018; Farah, Hasni, and Abbas 2018; Rahi and Ghani 2018; Sarfaraz 2017).

The positive relationship between performance expectancy and behavioral intention indicates that low-income households are more likely to use digital financial services if they believe that it is beneficial for them. This relates to the two main ways that low-income households can benefit from the use of digital financial services which was mentioned earlier in this research. In the context of low-income households, some of the most prominent benefits of digital financial services include being able to conduct financial transactions anywhere, anytime (Alalwan, Dwivedi, and Williams 2016; Ngugi et al. 2020), high level of accessibility (Tan and Lau 2016b) and secure payment systems (Bongomin et al. 2018). All these benefits increase the efficiency of financial services which help low-income households fight against poverty. In fact, the use of digital financial services through formal banking accounts has been proven to increase the level of

financial inclusion for low-income households (Dancey 2013). The ability to make essential day-to-day financial transactions using digital financial services help reduce the vulnerability and inequality in the marketplace for low-income households (Kamran and Uusitalo 2016; Kempson and Collard 2012).

The convenience of digital financial services is evident in a recent policy released by the Malaysian government. Recognizing the benefits of digital financial services as a strategic tool for Malaysia's transition to a high-income economy, the government has rolled out several initiatives to improve the level of convenience and access to digital financial services. These initiatives are outlined in the Financial Sector Blueprint 2011-2020 by the Malaysian government (Bank Negara Malaysia 2011). The key priorities of the blueprint include making mobile banking the forefront channel to encourage greater participation in the formal financial market. Some features introduced to encourage the use of mobile banking include introducing online Electronic Bills Payments Portal which increases the convenience of paying bills through one channel instead of using multiple channels. Another key priority of the Blueprint is to improve the electronic payments' infrastructure by increasing the number of Point of Sale (POS) terminals, especially at smaller merchants. Wider acceptance of PIN-based debit cards among merchants is also among the initiatives. A good incentive infrastructure is also introduced to encourage the use of debit cards (Bank Negara Malaysia 2011).

The second way that low-income households benefit from digital financial services also relates to performance expectancy. This is because they perceive that the use of digital financial services will help them build their wealth by connecting them to providers of credit, insurance and investment (Ozili 2018). Hence, it can be said that low-income households believe that the use of digital financial services provide them access to secure credit providers (Ozili 2018) and insurance which helps reduce their vulnerability to risks such as economic, political, natural disasters or lifecycle-related (Radermacher, Ralf, and Brinkmann 2011).

Aligned with this, the Malaysian government is committed to expand the range of financial services to meet the distinct needs of the underserved population, such as low-income households. Under the Financial Sector Blueprint 2011-2020, the government strengthens the institutional arrangement with formal financial institutions to provide micro savings products that require low periodical savings commitments while also providing favorable returns to low-income households.

The use of these micro savings products can be accessed online and this encourages low-income households to save for long-term goals such as education, small business and retirement (Bank Negara Malaysia 2011).

Given these financially inclusive initiatives done by the Malaysian government, they will lead low-income households to be more likely to accept digital financial services as they believe that their quality of life will improve.

H2: There is a positive relationship between facilitating conditions (FC) and the behavioral intention (BI) to accept digital financial services

Hypothesis 2 proposes that there is a positive relationship between facilitating conditions (FC) and the behavioral intention (BI) to accept digital financial services. With reference to Table 5.1, it was found that facilitating conditions has a positive impact on the behavioral intention to accept digital financial services. The research findings show that the path coefficient is 0.133 with a p value of 0.018 ($p<0.05$) which confirms this hypothesis. This finding is consistent with past studies which found that facilitating conditions is positively correlated to behavioral intention (Alalwan, Dwivedi, and Rana 2017; Gharaibeh and Mohd Arshad 2018; Rahi, Abd. Ghani, and Ngah 2019; Savic and Pesterac 2019).

Past studies have also established empirical support that facilitating conditions has a positive impact on different technologies of digital financial services such as mobile banking (Alalwan, Dwivedi, and Rana 2017; Arshad, Mat, and Ibrahim 2018) and internet banking (Martins, Oliveira, and Popovič 2014). The confirmation of facilitating conditions as a determinant indicates that low-income households use digital financial services as they believe that the necessary facilities, resources and support to use the services are available. One of the main reasons that low-income households in Miri, Sarawak accept digital financial services can be attributed to the high level of mobile phone ownership. This is supported by DOSM (2017) which stated that ownership of mobile phones for the B40 group is at 92.70% compared to home internet subscription which is 22.70%. The high level of mobile phone ownership even among low-income households is caused by several key factors such as the affordability of mobile phones and low-cost communication

networks (Hinson 2011). Therefore, this means that low-income households can make use of their experience with mobile phones and apply it in the usage of digital financial services.

More importantly, the variety of mobile phones means that low-income households can obtain one which suits their capability to use them. In relation to this, the convenient nature of using a mobile phone is related to facilitating conditions because Martins, Oliveira, and Popovič (2014) stated that digital financial service users need to know how to use computers and connect it to the internet to use it. In addition, low-income households also accept digital financial services because they perceive it as compatible with the digital devices that they use.

Another important factor which supports the role of facilitating conditions is accessibility to the internet. This is mainly driven by the level of Internet coverage within Malaysia. In 2010, Malaysia introduced the National Broadband Initiative (NBI) which aims to expand the coverage of Internet connection throughout Malaysia. This policy aims to address issues with the supply and demand of internet within Malaysia that has been a pressing concern. Relevant to low-income households in this study, some of the key initiatives include expanding the coverage for mobile broadband 3G and LTE, suburban broadband (SUBB) coverage and rural broadband (RBB) coverage. These initiatives have proven to be effective as it increased broadband penetration from 25% in 2006 to 66.6% in 2013 (MAMPU 2020).

Furthermore, another notable initiative by the government to increase internet accessibility is providing a one-off discount of RM200 for the purchase of a 3G smartphone from verified Malaysian Communications and Multimedia Commission (MCMC) representatives. As a majority of Malaysians who use the internet are youths, this initiative aims to raise the standard of living for youths and encourage youths to contribute to the nation's economy through e-commerce. Moreover, this also aligns with the demographic statistics of the respondents for this study which also primarily comprises of youths where 44% of the respondents are from 26-33 years old. According to the Malaysian government, youths are defined as individuals from age 15 to 30.

Given the ease of access to the internet through affordable mobile phones and increased internet coverage, this causes low-income households to perceive that they have adequate facilities, resources, and support to accept digital financial services.

H3: There is a positive relationship between hedonic motivation (HM) and the behavioral intention (BI) to accept digital financial services

Hypothesis 3 proposes that there is a positive relationship between hedonic motivation (HM) and the behavioral intention (BI) to accept digital financial services. With reference to Table 5.1, it was found that hedonic motivation has a positive impact on the behavioral intention to accept digital financial services. The research findings show that the path coefficient is 0.127 with a p value of 0.015 ($p<0.05$) which confirm this hypothesis. This finding is consistent with past studies which found that hedonic motivation is positively correlated to behavioral intention.

For instance, past studies on the technology acceptance of digital financial services have shown that hedonic motivation positively impacts behavioral intention such as internet banking (Rahi, Ghani, and Ngah 2020) and mobile banking (Alalwan, Dwivedi, and Rana 2017; Gharaibeh and Mohd Arshad 2018; Farah, Hasni, and Abbas 2018). The confirmed role of hedonic motivation in digital financial services indicates that low-income households perceive the use of digital financial services as enjoyable and fun. In other words, the use of digital financial services invokes intrinsic utilities which are non-functional and emotional in nature (Farah, Hasni, and Abbas 2018). As the target sample in this study are low-income households, this relates to early use of technology as they are most likely to have limited experience with using this service.

For low-income households, their decision to accept digital financial services is attributed to the novelty of digital financial services (Holbrook and Hirschman 1982). This attracts low-income households to use them. Formal banking institutions have created mobile applications and websites which utilize appealing visuals. For instance, banks are now incorporating game mechanisms in digital financial services which attracts low-income households to use their services. Additionally, gamification can be seen in the MAE app, which is an e-wallet created by Malayan Banking Berhad (Maybank). A gamification feature in the MAE app is available through the 'Money MAE-Hem' which encourages users to use the app by playing a game which gives them opportunities to earn money by winning the game.

As appealing visuals have been proven to invoke the feelings of pleasure and entertainment, low-income households are more likely to use and recommend the use of digital financial services to others (Arcand et al. 2017; Sahoo and Pillai 2017). Given these reasons, it is evident that low-

income households are motivated by intrinsic utilities such as novelty of digital financial services and appealing visuals, which are represented by hedonic motivation.

H4: There is a positive relationship between price value (PV) and the behavioral intention (BI) to accept digital financial services

Hypothesis 4 proposes that there is a positive relationship between price value (PV) and the behavioral intention (BI) to accept digital financial services. With reference to Table 5.1, it was found that price value has a positive impact on the behavioral intention to accept digital financial services. The research findings show that the path coefficient is 0.109 with a p value of 0.014 ($p<0.05$) which confirm this hypothesis. This finding is consistent with past studies which found that price value is positively correlated to behavioral intention.

In fact, price value has been shown to positively impact the behavioral intention to adopt mobile banking (Alalwan, Dwivedi, and Rana 2017; Arenas-Gaitán, Peral-Peral, and Ramón-Jerónimo 2015; Baptista and Oliveira 2017). From the positive relationship between price value and behavioral intention, it is evident that low-income households believe the benefits they obtain from digital financial services is greater than the price incurred to access the service. Some of the price that low-income households must pay to access digital financial services are cost of digital device, internet bills, initial service setup costs, annual card fees and transaction fees. As low-income households have limited financial resources, these costs may hinder them from using digital financial services.

Although there are costs incurred with the use of digital financial services, low-income households believe that they benefit in many ways from the use of these services. One of the most prominent benefits is increasing the level of financial inclusion for low-income households in the society (Sassi and Goaied 2013). This manifests through several advantages such as being able to keep their money through secure channels of digital financial services such as online banking, mobile wallet and electronically enabled cards. Compared to keeping cash with non-bank digital financial services provider, bank-led digital financial services enable secure transactions which reduce the risk of theft or robbery (Chen et al. 2020).

A key area where the benefit of digital financial services is prominent for low-income households is government social cash transfers. Examples of these government social cash transfers are Bantuan Rakyat 1 Malaysia (BR1M), Bantuan Prihatin Nasional (BPN) and Bantuan Sarawakku Sayang (BSS). These government social cash transfers often involve low-income households nationwide, be it in urban or rural areas. By transferring this money through digital financial services, this leads to an increase in financial inclusion for low-income households because they participate directly in the formal financial system (Dancey 2013). More importantly, distribution through digital financial services enables low-income households to receive payments in a timely, secure and efficient manner. Without digital financial services, low-income households must travel to designated pick up areas to obtain their government cash aid. Apart from increased financial inclusion, low-income households also perceive that the benefits they receive from digital financial services include improved functionality, enjoyment, service quality, usefulness, interactivity and accessibility (Arcand et al. 2017).

Secondly, the positive relationship between price value and behavioral intention is also driven by the lowered cost of use for digital financial services. In the past, the issue of price distortion is apparent within the formal financial market, causing digital financial services to be more expensive compared to paper-based instruments. In fact, the online transfer of money using the Interbank GIRO (IBG) used to be above RM2 per transaction. Recognizing this price distortion, the Malaysian government introduced the Pricing Reform Framework which lowered the cost of use for online transfer of money via IBG (Bank Negara Malaysia 2014). As an impact of the policy, the cost of online money transfers is now RM1.00 at Automated Teller Machines (ATM) and RM0.10 for internet banking. In fact, there are banks in Malaysia that offer completely free interbank cash transfers. The reduction in the cost of transferring money online leads to a positive outlook about price value, especially among low-income households.

Thirdly, the low cost in internet access is a driving feature of price value as a determinant. According to a report by World Bank (2018), Malaysia is a mobile-first country. This means that Malaysian consumers mainly access the internet through their mobile devices. Furthermore, Malaysia is the most connected country among its peers in the ASEAN region. For every 100 individuals, Malaysians have 92 active mobile Internet subscriptions. The burgeoning growth of mobile internet has benefitted four major players in the mobile market that together takes up 95%

of the market shares. Despite this, Malaysian consumers pay higher prices to access the internet compared to its ASEAN peers for similar mobile and fixed broadband plans albeit having slower download speeds. High prices and lower affordability can hinder the adoption of digital financial services especially among low-income households in Malaysia. In 2018, a major regulatory reform through the introduction of the Mandatory Standard on Access Pricing (MSAP) by the country's telecommunications regulator, the Malaysian Communications and Media Communication (MCMC). This policy has significant positive impact as the average speed for fixed broadband has tripled within a year. More importantly, the price of fixed broadband connection is now over 40% cheaper (World Bank Group 2019). Consequently, this had led to an increase in subscription and affordability.

Based on these justifications, low-income households believe that the collective benefits that they receive from the use of digital financial services outweigh the cost incurred to use the technology.

H5: There is a positive relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Hypothesis 5 proposes that there is a positive relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services. With reference to Table 5.1, it was found that financial literacy has a positive impact on the behavioral intention to accept digital financial services. The research findings show that the path coefficient is 0.186 with a p value of 0.000 ($p<0.001$) which confirm this hypothesis. It is also important to note that financial literacy is the second most powerful determinant after performance expectancy.

This determinant was derived from literature and has never been tested in the context of a UTAUT2 framework. However, there have been past evidence which show that financial literacy leads to positive financial behaviors (Nguyen and Doan 2020). In the context of this study, the acceptance of digital financial services is a positive financial behavior because it leads to numerous benefits for low-income households such as enabling them to fight against poverty by increasing the efficiency of basic financial services (Ozili 2018; Rizwan and Catherine 2016). Furthermore, access to digital financial services also empowers low-income households to build their wealth by

being connected to advanced digital financial services through credit, insurance and investment (Ozili 2018).

Financial literacy is imperative for low-income households because it builds their capacity to apply a combination of knowledge, awareness, skill, attitude and behavior in their financial decisions. In fact, this determinant is highly relevant for this study because it implies that access to digital financial services alone is insufficient. Hence, low-income households must be equipped with financial literacy to ensure that the level of financial inclusion among Malaysians increases. This is even more important in the context of low-income households as many Malaysians have poor financial literacy which is evident through the excessive amount of debt and poor retirement planning choices. In this regard, the role of financial literacy is imperative for low-income households because it empowers them to make optimal decisions such as accepting digital financial services (Bongomin et al. 2017).

From the descriptive statistics of this study, it shows that the highest educational qualification for majority of the research participants is a diploma. This is expected as many low-income households often forgo pursuing higher educational qualifications due to financial constraints and limited access to credit (Mustapa, Al Mamun, and Ibrahim 2018). Although so, this study shows that financial literacy for low-income households leads to the acceptance of digital financial services. Interestingly, this seems to oppose a notion by Huston (2010) which stated that majority of low-income households have low levels of financial literacy. A closer look at the demographics of the research participants revealed that majority of them only have a diploma as the highest education qualification. Despite this, low-income households can still develop financial literacy through a combination of informal and formal experience. This is supported by Worthington (2016) which stated that financial literacy can be taught to lead towards positive financial behaviors.

In the context of Malaysia, the development of good financial literacy among low-income households is possible through several efforts. Murugiah (2016) detailed several noteworthy efforts to encourage financial literacy by the Malaysian government.

From a formal education context, the Malaysian government recently introduced comprehensive financial education components in the educational curriculum for students from Primary 3 until

secondary school in 2016. Some of the financial literacy aspects being taught include money management, savings, planning and investment.

Meanwhile, there are numerous noteworthy efforts done by the government to introduce informal financial education in Malaysia. One of the most noteworthy efforts was launched by Bank Negara Malaysia (BNM) to establish the Credit Counseling and Debt Management Agency (AKPK). Under this agency, there are multiple initiatives that can benefit low-income households. Several key services that AKPK provide are financial education, financial counselling and debt management program. Throughout the year, AKPK organizes public programs which aim to educate the public about financial education through fun weekend activities. Additionally, AKPK also provides free financial courses which are accessible through their online learning portal. There are different courses that individuals can access for free such as cashflow management during festive seasons, emergencies, property purchase and marriage (AKPK 2020).

Furthermore, Malaysia recently introduced the National Strategy for Financial Literacy 2019-2023 which aspires to elevate the level of financial literacy among Malaysians. This policy recognizes that inculcating financial literacy among Malaysians requires a sustained and coordinated approach to encourage long-term behavioral change. Therefore, this policy identifies several key priorities to inculcate financial literacy among Malaysians. Relevant to low-income households in this study, the strategic priority under this policy is to increase access to basic financial education tools. Furthermore, financial education campaigns are also held at a greater scale nationwide. Next, the strategic policy is to foster positive financial behavior among targeted groups. Financial knowledge will be imparted among the youths, which make up most of the respondents for this study. Meanwhile, employees are also targeted to receive financial education at their workplace. Additionally, community-based financial education and financial knowledge for the self-employed are also emphasized. Moving on, another strategic priority under the policy is educating the public on the importance of building long-term wealth and retirement planning. This is done through providing guidelines, tools and channels which promote income diversification (Financial Education Network 2019).

Hence, it is reasonable to conclude that to the extent that these initiatives are effective in improving financial literacy, they will contribute to people making better financial decisions. Aligned with

the objectives of this study, this means that it can also lead to low-income households making better financial decisions such as accepting the use of digital financial services.

H6: Power Distance (PD) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Hypothesis 6 proposes that power distance positively moderates the relationship between financial literacy and the behavioral intention to accept digital financial services. It proposes that the direct relationship between financial literacy and behavioral intention is expected to be stronger for individuals with high power distance values. With reference to Table 5.1, the path coefficient is 0.039 with a t value of 0.949. The R^2 change from 0.494 to 0.498 also indicates that with the addition of an interaction term, R^2 has changed about 0.4% (additional variance). From this value, there is very minimal change to the additional variance. Furthermore, the f square of this moderating construct is 0.002. From these results, it can be concluded that power distance does not have a moderating impact on the direct relationship between financial literacy and behavioral intention to accept digital financial services. Hence, the hypothesis is not supported.

Power distance has never been tested to moderate the relationship between financial literacy and behavioral intention in past studies. However, past studies have shown that individuals which come from high-power distance societies are often obliged to follow instructions from authoritative figures or their superiors to take up digital financial services (Shane 1995; Ansari, Ahmad, and Aafaqi 2004). Hence, the unsupported hypothesis shows that the latter notion contradicts the hypothesized relationship. However, there are past studies that state that power distance doe not play a moderating role in technology acceptance (Alshare et al. 2011; Goularte and Zilber 2019; Mutlu and Ergeneli 2012; Udo and Bagchi 2011). There are two possible reasons as to why this hypothesis is not supported.

First and foremost, information technology is less likely to be used in high power distance societies because control stifles creative pursuits. Under the premise of high power distance, individuals are subjected to authoritative measures which dictate knowledge sharing and exchange (Shane 1995). A study conducted by Straub, Keil, and Brenner (1997) found that managers and employees which are separated by high power distance are less likely to use computer-based media. This is further

supported by Luo, Wang, and Tong (2020) which found that individuals in high power distance societies are negatively correlated to innovative behaviors. This can be attributed to ineffective interactions among individuals (Nembhard and Edmondson 2006), low amount of information sharing (Luo et al. 2020) and the weak autonomy that individuals have in innovation processes (Banerjee and Srivastava 2012). Moreover, past literature have shown that the use of technology is most effective when it empowers individuals (Harris 1997; Panko and Panko 1988). However, in the context of low-income households, this situation is unlikely because they have low levels of financial literacy. Therefore, they rely on instructions from higher levels of authority. In the society today, the government and banks are the primary stakeholders in increasing the access of digital financial services for low-income households. The dependency of low-income households to these stakeholders creates a major flaw because the authority lacks the technology knowledge to provide to the end users' needs of low-income households. This is evident in the lack of digital financial services that are compatible to the needs of low-income households (Bongomin, Yourougou, and Munene 2019; Mhlanga 2020). In fact, this is more prominent in the fact that financial exclusion exists because there is a gap in the current types of digital financial services offered and the ones that low-income households need to improve their financial situation (Koku 2015). Although other stakeholders such as non-profit organizations and academics have necessary information on the digital financial services needs of low-income households, the high levels of power distance hinder the major stakeholders such as the government and the bank from taking advice from other stakeholders due to the rigid power structure in place.

For instance, the Malaysian government offers the Credit Counseling and Debt Management Agency (AKPK) for the residents of Sarawak. Although this program is available for free, it is a voluntary program. Furthermore, the major shortcoming of this program is that it primarily focuses on debt management for people with serious financial issues (AKPK 2020). The credit counseling program is also not comprehensive to address the needs of low-income households and there is a lack of awareness about this program. The effectiveness of this program is also unknown for low-income households. Using this logic, making major decisions without consulting those that have more technological knowledge and understanding of the end users' needs can lead to unsuccessful results especially in digital financial services acceptance. Consequently, this does not engage low-income households to use their financial literacy to accept digital financial services.

Secondly, the multiplicity of normative influences which encourages financial literacy could confound the moderating influence of power distance. According to Joe et al. (2017), normative influence refers to the influence exerted on an individual to conform to the norms of the reference group. The normative influence in this hypothesis relates to the stakeholders that play a role in building financial literacy among low-income households. Bongomin and Munene (2020) stated that normative influence is a key component of the institutional framework that can promote financial literacy among low-income households. Under the premise of high power distance, low-income households accept the hierarchy in place. In this study, the hierarchy manifests through the bank as this study focuses on bank-led digital financial services.

However, the relationship between the bank and low-income households is not the same as the traditional superior-subordinate relationship which power distance implies (Irangani, Liu, and Gunesekera 2020). This is because multiple hierarchies exist in the inculcation of financial literacy among low-income households. The hierarchy in this study exists among banks and low-income households, the government and low-income households (Bank Negara Malaysia 2011), and non-profit organizations and low-income households. These hierarchies exist because these stakeholders all play a key role in promoting financial literacy among low-income households. In this research, only the level of financial literacy among low-income households was measured. The impact that each influence has on the level of financial literacy among low-income households was not measured individually. For instance, the impact of the hierarchy between the government and low-income households may be stronger compared to the hierarchy which involves the bank and non-profit organizations. Hence, the multiplicity of these relationships could dampen the moderating effect that power distance has on the direct relationship.

H7: Collectivism (C) positively moderates the relationship between financial literacy (FL) and the behavioral intention (BI) to accept digital financial services

Hypothesis 7 proposes that collectivism can moderate the relationship between financial literacy and the behavioral intention to accept digital financial services. It proposes that the direct relationship between financial literacy and behavioral intention is expected to be stronger for individuals with collectivism values. With reference to Table 5.1, it was found that collectivism has a negative impact on the behavioral intention to accept digital financial services.

The research findings show that the path coefficient is -0.064 with a t value of 1.474 which rejects this hypothesis. The R^2 change from 0.494 to 0.498 also indicates that with the addition of two interaction terms, R^2 has changed about 0.4% (additional variance). From this value, there is very minimal change to the additional variance. The f square of this moderating construct is 0.007. From the negative path coefficient, this indicates that the hypothesis is not supported. From past literature, there are studies which also did not support the moderating role of collectivism for technology acceptance (Ganguly et al. 2010; Tarhini et al. 2017). There are several possible reasons as to why this hypothesis is not supported.

Firstly, a possible reason to the rejection is that the in-groups for low-income households do not adopt digital financial services. The collectivism construct relates to the knowledge sharing for financial literacy. More importantly, collectivist individuals differentiate people into two groups which are in-group members and out-group members (Chow, Deng, and Ho 2000). When it comes to sharing knowledge, individuals with collectivist values need to identify others as their in-group members before they share (Bao, Zhang, and Chen 2015). Examples of in-group members in this study are immediate relatives and members of the local community, which include low-income households. Meanwhile, out-group members are members of a different community such as middle or high-income individuals and people who they have less frequent contact with.

As a collectivistic individual is associated with shared pursuits based on the collective interest of the in-group, it is therefore imperative to understand the current norms of their ingroup. In the community that low-income households live in, people primarily transact in a cash-based economy. This is supported by the findings of BNM (2017) which stated that majority of the two million adults in Malaysia which are unbanked comprise of low-income individuals. Furthermore, a study by UN Capital Development Fund (2019) revealed that the majority of low-income

households are not aware of the potential that digital financial services hold. Hence, the in-group members of low-income households clearly do not propagate the belief that the acceptance of digital financial services is important to change their financial situation. Therefore, low-income households are likely to follow the beliefs of their in-groups due to the cohesive nature of collectivistic societies. This is further supported by Van Everdingen and Waarts (2003) which found that the uptake of new technologies is more challenging in collectivistic societies as there is often a delay due to the collective decision process. The reluctance to accept digital financial services in collectivist societies can also be attributed to the fact that face-to-face media is preferred as it transmits situational cues which are deemed as desirable for collectivists (Straub and Karahanna 1998).

Secondly, this hypothesis is not supported because Sarawak may not have an extremely collectivistic culture. In the context of South East Asian countries, Malaysia scores higher on this index compared to Singapore (20), Thailand (20), and Indonesia (14) (Hofstede Insights 2019). Higher scores on this index denote that individuals have a higher tendency to possess individualistic cultural values. Given that the values were tabulated 40 years ago, there is a likelihood that Malaysians have been exposed to recent and instrumental cultural exchange events that may cause deviation from the previous collectivistic values. These instrumental events include cultural exchange with other countries in the form of students studying abroad (Borneo Post Online 2019; Sarawak Voice 2019), transfer of foreign labor experts into Malaysia (Jordaan 2018) and many events that involve international interaction with Malaysian counterparts. More importantly, Malaysia is also becoming increasingly dependent on migrant workers in which Thuraisamy (2018) posited that thes workers are becoming permanent residents in Malaysia. These cultural exchange events have exposed Malaysia to outside influences at a large scale. Therefore, this exposure impacts the moderation of collectivism on the direct relationship of financial literacy and behavioral intention, in which the collectivistic values within the Malaysian society may have reduced over the years due to exposure to external influences. Moreover, the data from this study are collected primarily from young adults in Miri, Sarawak, which may show more deviation from the traditional Malaysian culture.

5.5 Implications of The Study

In this section, two different implications are discussed. Firstly, the theoretical implications are discussed. Then, the managerial implications of the study are elaborated.

5.5.1 Theoretical Implications

This research has several theoretical implications. The following section details the key theoretical implications.

First and foremost, this study added to the body of knowledge by being the first UTAUT2 study to incorporate the use financial literacy as one of its determinants. By investigating the role of financial literacy towards behavioral intention, this provides an opportunity for researchers to understand the impact of this determinant. The study findings provide evidence that financial literacy has a significant impact on the behavioral intention to accept digital financial services. Although the role of financial literacy has been empirically established to lead to positive financial behaviors, the impact of this determinant has never been tested in the UTAUT2 theory. The importance of financial literacy to help individuals develop and utilize their financial knowledge has been reiterated by several scholars (Huston 2010; World Bank 2008; 2009). Most of the past studies investigating the role of financial literacy only assessed some areas of finance. For instance, Astuti and Trinugroho (2016) investigated the relationship between financial literacy and engagement in banking among the low-income households in Indonesia. This study empirically found that financial literacy has a positive relationship with banking engagement. Meanwhile, another financial literacy study was conducted by Henager and Cude (2016). It assessed the relationship between financial literacy and financial behavior which was classified into short-term and long-term behavior. The role of financial literacy was also confirmed in this study. Similarly, Königsheim, Lukas, and Nöth (2017) conducted a study which investigated the relationship between financial knowledge and risk preferences on the demand for non-bank digital financial services. This study also confirmed the role of financial literacy towards the demand for non-bank digital financial services. To the best of our knowledge, this is the first study to ever investigate

the role of financial literacy towards bank-led digital financial services using the UTAUT2 framework. This can add to the body of knowledge for technology acceptance by examining the impact of this role towards low-income households.

The second theoretical implication of this study is to empirically confirm the direct relationship between the determinants of UTAUT2 to the behavioral intention to accept digital financial services. These determinants are performance expectancy, facilitating conditions, price value and hedonic motivation. One of the research objectives is to identify the determinants of the behavioral intention to accept digital financial services. Past studies that utilized the UTAUT2 studies have linked the determinants to behavioral intention (Alalwan, Dwivedi, and Rana 2017; Arshad, Mat, and Ibrahim 2018; Gharaibeh and Mohd Arshad 2018; Farah, Hasni, and Abbas 2018; Rahi and Abd. Ghani 2018; Sarfaraz 2017). From the findings of this study, the roles of all the determinants from the UTAUT2 study positively impact behavioral intention to accept digital financial services. From these findings, it adds to the body of knowledge by confirming the role of these determinants from an Eastern context. Although past studies have utilized the UTAUT2 theoretical framework, many of them only study a subsection of digital financial services such as mobile banking (Alalwan, Dwivedi, and Rana 2017; Gharaibeh and Mohd Arshad 2018; Farah, Hasni, and Abbas 2018). In comparison, this study investigates all the services included under digital financial services, such as mobile phones, electronically enabled cards, tablets, point of sale (POS) terminals, automated teller machines (ATM) or any other digital systems (Alliance for Financial Inclusion 2016). This study only links four main determinants from the UTAUT2 framework which are performance expectancy, facilitating conditions, price value and hedonic motivation. Other UTAUT2 determinants such as effort expectancy, social influence and habit are not considered as they are not relevant for this study. The exclusion of these factors contributes to the UTAUT2 theory as it demonstrates that performance expectancy, facilitating conditions, hedonic motivation and price value are sufficient to lay a strong foundation for the acceptance of digital financial services among low-income households.

Lastly, this research is among the few technology acceptances studies that investigated the moderating role of Hofstede national cultural dimensions towards financial literacy and behavioral intention. Two Hofstede national culture dimensions were selected for this study which are power distance and collectivism. The moderating impacts of cultural dimensions are considered in this

study as culture remains fairly unchanged in a society (Guiso, Sapienza, and Zingales 2006). Hence, culture can impact economic outcomes such as the acceptance of digital financial services. The investigation on the moderating role of cultural moderators was motivated by past studies which stated that the diverse cultural background of individual users impact their thinking patterns and behaviors (Hofstede 2001; Rooney 2013). The findings from the moderator hypothesis found that power distance does not have an impact on the relationship between financial literacy to behavioral intention. Meanwhile, collectivism inversely impacts the relationship between financial literacy and behavioral intention. The unsupported relationships of these moderating variables contribute to the UTAUT2 theory because this could be a plausible cause to reconsider the role of cultural moderators in technology acceptance. In fact, a study by Goularte and Zilber (2019) have rejected the role of power distance and showed very weak significance for collectivism in the adoption of mobile banking. More importantly, this could also point to the possibility that an individual may not possess the same level of cultural dimensions although they live in the same country. In fact, the Hofstede National Culture Theory was designed in a way that assigns the Hofstede cultural dimensions equally among the respondents based on the national index. However, Minkov and Hofstede (2011) posits that the cultural moderators may not correlate meaningfully across individuals. This can be attributed to the fact that Malaysia is a heterogenous population as it is a multi-cultural society. Given this fact, individuals may develop different cultural dimensions as their upbringing differs according to their culture.

Moreover, this issue is more prominent in multi-cultural societies which are present in Asian countries, such as Malaysia which is the location of this study. This is supported by Minkov and Hofstede (2011) which posited that the cultural moderators may not correlate meaningfully across individuals.

5.5.2 Managerial Implications

The results from this study bear managerial implications to different stakeholders of digital financial services in Sarawak. More specifically, the findings of this study will impact the Malaysian government, non-governmental organizations, policy makers, banks and mobile banking application developers. The empirical findings of this study can provide value to these stakeholders to improve the efficiency and effectiveness of digital financial services. Through the findings of this study, the following section details the key managerial implications of this study.

From the study, it was empirically established that performance expectancy is the strongest determinant of the behavioral intention to accept digital financial services. Therefore, stakeholders such as banks and bank application developers must ensure that digital financial services are tailored to the needs of low-income households. By meeting the digital financial needs of low-income households, this will increase the perceived value of the application for low-income households. For instance, Bank Negara Malaysia announced that it will waive the RM0.50 interbank transfer fee for transactions up to RM5,000 (The Star 2017). This change is vital as it will incentivize low-income households to use digital financial services to store their money and transfer them at no cost. Consequently, the use of digital financial services will be the preferred choice as it is a safe avenue to store and transfer money. More importantly, the government and banks should focus on creating awareness about the practical benefits of digital financial services for low-income households. The marketing of these services should highlight and educate low-income households about the convenience, benefits and efficiency of digital financial services. By highlighting the benefits of digital financial services, this can potentially increase the acceptance rate among low-income households. The digital footprint obtained from the use of digital financial services can be used to further understand which area of benefit or convenience in digital financial services low-income households prefer most.

Facilitating conditions is also a determinant of behavioral intention. This finding indicates that stakeholders such as banks should ensure that help should be made available and accessible to low-income households in assisting them with the use of digital financial services (Ozili 2018). As low-income households often lack mobility, banks should ensure that there are enough branches or agent coverage available for this subpopulation. As low-income households are more likely to

visit physical branches, employees should be equipped with the skills to help them to set up and use digital financial services. From the perspective of the Malaysian government, it is important that they invest in providing sufficient, accessible and affordable internet connection for low-income households. Without a stable and affordable internet connection, the effort to encourage the acceptance of digital financial services will not be highly successful. This is also supported by the Sarawak Digital Economy Strategy 2018-2022 which included digital infrastructure as part of its key areas to establish a digital economy in Sarawak (Jabatan Ketua Menteri Sarawak 2018). Under digital infrastructure, there are several propositions to improve internet connectivity such as establishing fiber connection, setting up low-power wide-area network (LPWAN) and improving the current 3G and 4G connection. Additionally, clear and easy step-by-step instructions must be provided for low-income households to begin using digital financial services. This is available through the digital literacy program under the digital inclusivity aspect. Therefore, these are the facilitating conditions that the stakeholders must consider.

Hedonic motivation is also an important determinant towards behavioral intention. In the early stages of technology usage, hedonic motivation plays a key role in increasing the level of acceptance. Therefore, banking application developers should consider incorporating features which enhance the level of entertainment, excitement and fun that low-income households experience from using digital financial services. A prime example of a feature which embodies hedonic motivation is gamification. This term is defined as the use of game mechanisms and design techniques on digital financial services to make the experience more enjoyable (Baptista and Oliveira 2017). Ultimately, this leads to increased audience engagement and compels low-income households to continue using digital financial services. One of the key examples of gamification in digital financial services is shown by the MAE app, created by Malayan Banking Berhad (Maybank). The MAE app is an e-wallet which enables users to pay easily at retail stores by scanning a unique QR code, sending and requesting money, or splitting bills with friends (Maybank 2020). The gamification feature is introduced through ‘Money MAE-Hem’ where users stand a chance to earn free money by playing an interactive game. Features such as gamification invokes the feeling of entertainment and enjoyment among users. This is especially relevant for low-income households which are in the early stages of digital financial services usage because hedonic motivation has been shown to increase levels of technology acceptance (Alalwan et al. 2015).

Moving on, price value is another determinant of behavioral intention. Given that this study deals with low-income households, the confirmed role of price value is not unexpected. Therefore, the government, banks, policymakers and non-governmental organizations should consider the impact of price value on the acceptance of digital financial services. From the findings, low-income households perceive that the benefits they receive are greater than the price they pay to access digital financial services. Hence, banks should constantly look into more ways to improve how they develop, operate and manage digital financial services. It is important to investigate into the overall aspects of digital financial services such as functionality, enjoyment, service quality, usefulness, interactivity and accessibility to improve the perception of low-income households towards these services (Arcand et al. 2017).

In this study, another determinant of behavioral intention is financial literacy. This determinant is central to this study as it is a key contribution to the study. To the best of our knowledge, this study is the first study to propose the use of financial literacy as a determinant of technology acceptance using the UTAUT2 framework. The contribution of this study is further strengthened by the empirical findings from the data analysis which established the role of financial literacy as the second most important determinant of behavioral intention. In relation to the target population of this study, financial literacy is instrumental for low-income households as it leads to good financial behaviors such as accepting the use of digital financial services. The significance of financial literacy points to the role of policymakers, government and non-governmental organizations towards inculcating financial literacy among low-income households. Without strong financial literacy, low-income households will get overwhelmed with the variety of digital financial services available today that they may end up not using it at all (Hauff et al. 2020; Lotto 2020). Therefore, the government and policymakers must introduce policies that build financial literacy across all walks of life. A key development towards improving the level of financial literacy in Malaysia is evident through the National Strategy for Financial Literacy 2019-2023. This financial literacy strategy is the first holistic strategy which outlines five key areas to elevate this skill. These key areas are nurturing values from young, increasing access to financial tools and resources, encouraging positive behavior, inculcating long-term financial planning and building wealth (Financial Education Network 2019). Some of the efforts which are relevant to low-income households include simplifying basic financial education for all, increasing the awareness of financial education initiatives and equipping the self-employed with knowledge to sustain and

build wealth. Apart from the government and policymakers, non-governmental organizations also play an important role in reaching out to low-income households by conducting regular financial literacy programs in areas with a high concentration of low-income households.

On the other hand, the moderating role of power distance has been rejected in relation to financial literacy and behavioral intention. More specifically, power distance does not have a moderating impact on the direct relationship between power distance and the behavioral intention to accept digital financial services. This is because information technology is less likely to be used in high power distance societies because innovation stifles creative pursuits. Another reason could possibly be due to the confounding normative influences present in the community. Therefore, an important way to encourage digital financial services acceptance among low-income households is for the government to encourage a positive perception towards digital financial services (Alshare et al. 2011). To do this, low-income households need to be equipped with financial literacy that will equip them with the awareness, knowledge and capability to make good financial decisions. Aligned with this, the roles of the government, policymakers, banks and non-governmental organizations are highlighted in the National Financial Literacy Strategy 2019-2023. In relation to the national strategy, an important strategic approach being highlighted is increasing access towards financial management information, tools and measures. Under this approach, basic financial education is simplified and made accessible for everyone. The level of awareness for financial education initiatives are done through nationwide campaigns (Financial Education Network 2019). With this level of awareness and accessibility, different stakeholders can work together to empower low-income households with better financial literacy.

Lastly, the moderating role of collectivism has also been rejected in relation to financial literacy and behavioral intention. More specifically, collectivism has been rejected because the in-groups of the low-income households do not adopt digital financial services. Also, Sarawak may not be an extremely collectivistic culture. With this in mind, the marketing strategy for bank should focus on individual benefits instead of community benefits. As low-income households may not be extremely collectivistic, they place a higher importance in their personal values compared to the opinions of their friends, family and peers. Additionally, financial literacy measures done by the government or non-governmental organizations need to focus on persuading individuals about the benefits of digital financial services. This is because the norms of the in-groups can change if they

believe that digital financial services can cause a positive impact in their life. This relates to the third strategic priority under the National Financial Literacy Strategy 2019-2023 which is to inculcate positive behavior among targeted groups (Financial Education Network 2019). Under this strategic priority, financial education is disseminated through various channels in different settings such as the workplace, community and approaching individuals who are self-employed. These measures can promote increased financial resilience among low-income households and consequently lead to better financial behaviors such as the acceptance of digital financial services.

5.6 Research Limitations and Suggestions for Future Research

In any research, recognizing the limitations of a study helps readers to understand the findings, context, and interpret the validity and credibility of a study (Ioannidis 2007). More importantly, disclosing the limitations in a study reveal future opportunities for improvements by other researchers. There are a few main limitations in this study.

The first limitation of the study exists in the ethnicity of the respondents. It is clear through the descriptive statistics that the ethnicity for majority of the respondents is Bumiputera. Non-Bumiputera respondents only make up 14.3% of the sample size. As data was collected through purposive and snowball sampling, which resulted in the researcher approaching many Bumiputera respondents. The lack of non-Bumiputera respondents may hinder a meaningful comparison to be done between the two ethnicities to identify the differences in the digital financial services acceptance. Hence, this research has a limitation in the form of lack of opinions from non-Bumiputera respondents.

Secondly, this study also experiences limitations due to the use of equivalized household income. The limitation exists because different households consist of different number of people. Therefore, the impact of the household income received differs according to the number of people in the household. In future studies, the process of population weighting suggested by United Nations (2012) should be conducted to obtain a better estimate of income distribution among the households.

Given the research limitations, the following are suggestions for future research. Future research should consider including a balanced number of Bumiputera and non-Bumiputera respondents to analyze a more representative sample. This will enable future research to make a meaningful comparison between Bumiputera and non-Bumiputera respondents in terms of their acceptance for digital financial services. Furthermore, the process of population weighting suggested by United Nations (2012) should be conducted to obtain a better estimate of income distribution among the households. Next, future studies should consider expanding the scope of this research to also include emerging financial technology (FinTech) in Malaysia which are divided into five main categories which are payments, investment management, capital raising, insurance, and market support (Financial Stability Board 2017). As emerging FinTech in Malaysia are increasingly dominated by non-bank entrants (IMF 2020; BNM 2021), assessing the roles of both bank and non-bank can yield more comprehensive findings as it takes into account a diverse range of digital financial services.

Lastly, future studies on the technology acceptance of low-income households should consider testing two other cultural dimensions which are uncertainty avoidance and long-term orientation. From the feedback of the respondents, low-income households tend to avoid any technology they are not familiar with due to fear that they will be scammed. Additionally, low-income households also tend to have a short-term orientation as they prefer to gratify themselves due to the lack of knowledge on tools to help them improve their financial situation such as digital financial services (Stewart 2011; Bongomin, Munene, Ntayi, et al. 2018). Therefore, future research can consider including other cultural dimensions as it could be more useful in providing a better understanding of the behavioral intention of low-income households to accept digital financial services.

5.7 Conclusions

This study presents vital empirical findings to the acceptance of digital financial services among low-income households in Miri, Sarawak. In this study, digital financial services are defined as bank-led digital financial services which can be accessed through digital channels such as the internet, mobile phones, electronically enabled cards, tablets, phablets, POS terminals and ATM machines. This study has two main research objectives. The first objective is to identify the determinants of the behavioral intention to accept digital financial services. The second objective is to investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services.

From an analysis of the current digital financial services acceptance rate in Malaysia, the target population of study is the low-income households. Aligned with the national definition, low-income households in Miri, Sarawak are defined as households with a gross monthly household income from RM1,070 to RM3,459. The focus on low-income households in this study is strengthened by the fact that only 52.2% of Malaysians use digital financial services. A study conducted by the United Nations showed that the overall awareness of digital financial services among low-income households is very low. There are three ways that digital financial services can help low-income households. Firstly, it enables them to keep their money in the formal financial market which leads to a decreased vulnerability and inequality in the marketplace as they can store their earnings in a safe platform. Secondly, digital financial services provide low-income households with more opportunities to accumulate wealth by having access to advanced digital financial services. Being connected to formal financial institutions links low-income households to providers of credit, insurance and investment. These financial tools empower low-income households to make beneficial long-term financial decisions for their households.

To investigate the objectives, this study utilizes the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as the key theoretical framework to investigate the research objectives. The UTAUT2 model is the most accepted theoretical model for consumers' adoption of technology, which was developed as an integrated framework of eight technology acceptance theories. A total of five determinants are investigated in this study which are performance

expectancy, facilitating conditions, price value, hedonic motivation and financial literacy. All these determinants are derived from the UTAUT2 framework except financial literacy.

In this study, the role of financial literacy is a key contribution as this study is the first to use financial literacy as a determinant in the UTAUT2 framework. The motivation to introduce financial literacy in this study is driven by the needs of the low-income households. As this subpopulation has been identified as an underserved population in the acceptance of digital financial services, financial literacy has been identified from past studies as a potential key determinant. Moreover, majority of low-income households in Malaysia are unaware of the potential that digital financial services hold. As low-income households are continuously challenged from several aspects such as social and economical resources, financial literacy is vital to equip low-income households with financial knowledge and the practical ability to implement this knowledge in daily financial decision making. Furthermore, improved financial literacy leads to an increased level of financial inclusion which is the equitable provision and access to digital financial services to the underserved population, the low-income households. Financial literacy can lead to an increased level of financial inclusion because it equips low-income households with knowledge on the importance of digital financial services. Hence, financial literacy can strengthen the impact of bank-led digital financial services for low-income households.

In addition to identifying the determinants of digital financial services acceptance, this study aims to investigate the moderating role of cultural dimensions on financial literacy to the behavioral intention to accept digital financial services. Hence, the Hofstede National Culture Theory is incorporated in this study to investigate the second objective. Furthermore, this theory was also utilized in this study to address a shortcoming in the UTAUT2 framework, which is the inability to measure the impact of culture in technology acceptance. The theory originally comprised of five cultural dimensions which distinguish the members of a country from another. The concept of culture is considered in this study as culture is an important reflection of the rules and social norms within a society which affects thinking patterns and behavior. In relation to digital financial services, this indicates that low-income households also view the technology from their perspective which is impacted by cultural values, norms, and beliefs. Aligned with the objectives of this research, two moderating variables were adopted from this theory which are power distance and collectivism. More importantly, the role of culture is considered in this study because there is

past literature evidence which indicates that culture is related to the effectiveness of information systems.

This study is a quantitative study. The sample size of this study is 343 households. Paper-based questionnaires were distributed to low-income households in Miri, Sarawak. The sampling method is a non-probability sampling method which are purposive and snowball sampling. Initially, a pilot study was conducted with 25 participants that fulfill the inclusion criteria of the study. The questionnaire was determined as reliable through the pilot study findings. Hence, the large-scale data collection was conducted on 343 participants. The method of data analysis employs the Partial Least Squares Structural Equation Modelling (PLS-SEM) method. The software used for this study is the SmartPLS 3.0.

From the data analysis process, the findings concluded that five out of the seven hypotheses were supported. The five hypotheses concluded that all five determinants proposed in the study framework play a significant role towards the acceptance of digital financial services. Meanwhile, the moderating roles of the two cultural dimensions were rejected. From these findings, it resonates the findings of past studies which stated that the determinants from the UTAUT2 framework are reliable to measure the acceptance of technologies. For instance, performance expectancy has been shown to be the strongest determinant for acceptance of digital financial services in this study. Another notable finding is that the role of financial literacy as the determinant of digital financial services acceptance has been validated. In this study, it is the second most important determinant. This further highlights the role of financial literacy as a contribution to this study as no other UTAUT2 study has utilized this construct as a determinant.

As Malaysia has taken an interest in the importance of financial literacy similar to many other countries, the findings will be important to guide the acceptance of digital financial services especially among underserved communities such as low-income households. The established role of financial literacy indicates that low-income households can develop financial literacy through a combination of informal and formal experience. The status quo in Malaysia indicates that there are multiple noteworthy efforts by the government to develop financial literacy. This includes the introduction of financial education components in the educational curriculum and establishing the Credit Counseling and Debt Management Agency (AKPK). More importantly, the National Strategy for Financial Literacy 2019-2023 is an important development as this policy aims to

inculcate financial literacy among Malaysians which requires a sustained and coordinated approach to encourage long-term behavioral change. The finding on the confirmed role of financial literacy also signifies the importance of the role for policymakers, government and non-governmental organizations towards inculcating financial literacy among low-income households. Additionally, the confirmed role of the other determinants can provide valuable insights for stakeholders in Sarawak which are seeking to improve the level of financial inclusion within the country. As for the rejected roles of cultural dimensions, this could possibly point to the need to study a target population with a balanced number of respondents from different ethnicities.

As the Sarawak state also aims to establish a digital economy within the state, the interest of the low-income households should not be left behind. Therefore, the findings from this research are key towards the interest of banks, governments, policymakers and non-governmental organizations to increase the acceptance of digital financial services among low-income households.

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“Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.”

APPENDIX

a) Appendix 1: Ethics Approval Letter

Curtin University

Research Office at Curtin

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7863
Facsimile +61 8 9266 3793
Web research.curtin.edu.au

18-Dec-2019

Name: Dhanuskodi Rengasamy
Department/School: Curtin University
Email: Dhanuskodi.Rengasamy@curtin.edu.au

Dear Dhanuskodi Rengasamy

RE: Ethics Office approval
Approval number: HRE2019-0837

Thank you for submitting your application to the Human Research Ethics Office for the project **DIGITAL FINANCIAL SERVICES ACCEPTANCE AMONG LOW-INCOME HOUSEHOLDS IN MIRI, SARAWAK: THE ROLE OF CULTURAL DIMENSIONS**.

Your application was reviewed through the Curtin University Negligible risk review process.

The review outcome is: **Approved**.

Your proposal meets the requirements described in the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*.

Approval is granted for a period of one year from **18-Dec-2019** to **17-Dec-2020**. Continuation of approval will be granted on an annual basis following submission of an annual report.

Personnel authorised to work on this project:

Name	Role
Rengasamy, Dhanuskodi	CI
Badeeb, Ramez	Supervisor
Dockery, Michael	Supervisor
Ngau, Christine Mening	

Approved documents:

Document

Standard conditions of approval

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:
   - proposed changes to the approved proposal or conduct of the study
   - unanticipated problems that might affect continued ethical acceptability of the project
   - major deviations from the approved proposal and/or regulatory guidelines
   - serious adverse events

3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
4. An annual progress report must be submitted to the Human Research Ethics Office on or before the anniversary of approval and a completion report submitted on completion of the project
5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
8. Data and primary materials must be retained and stored in accordance with the Western Australian University Sector Disposal Authority (WAUSDA) and the Curtin University Research Data and Primary Materials policy
9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
11. Approval is dependent upon ongoing compliance of the research with the Australian Code for the Responsible Conduct of Research, the National Statement on Ethical Conduct in Human Research, applicable legal requirements, and with Curtin University policies, procedures and governance requirements
12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

Special Conditions of Approval

COA - If you make any changes to the questionnaire after the pilot study is completed please make sure you submit the updated questionnaire as an amendment request.

This letter constitutes low risk/negligible risk approval only. This project may not proceed until you have met all of the Curtin University research governance requirements.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at hrec@curtin.edu.au or on 9266 2784.

Yours sincerely

Amy Bowater
Ethics, Team Lead

b) Appendix 2: Participant Information Sheet

PARTICIPANT INFORMATION STATEMENT

HREC Project Number:	HRE2019-0837
Project Title:	Digital Financial Services Acceptance among Low-Income Households in Miri, Sarawak: The Role of Cultural Dimensions
Chief Investigator:	Dr. Dhanuskodi Rengasamy
Version Number:	Participant Information Statement, Version 2
Version Date:	December 2019

You are invited to participate in this research.

What is the Project About?

Entitled, **"Digital Financial Services Acceptance among Low-Income Households In Miri, Sarawak: The Role of Cultural Dimensions."**, this research aims to identify the determinants of the behavioural intention to accept digital financial services and investigate the moderating role of cultural dimensions on financial literacy to the behavioural intention to accept digital financial services. The findings of this study seek to contribute to the study of technology acceptance by understanding the perspective of low-income households in DFS acceptance, which is hoped to assist the government, policymakers, educators, the banking sector and non-governmental organizations towards achieving complete financial inclusion within Malaysia.

This project will examine the following research questions:

1. What are the determinants of the behavioral intention to accept digital financial services?
2. How do cultural dimensions moderate financial literacy to the behavioral intention to accept digital financial services?

Who is doing the Research?

This is a Master of Philosophy (Finance) project conducted by Christine Mening Ngau. This project is supervised by Dr Dhanuskodi Rengasamy (Curtin University Malaysia), Dr Ramez Abubakr Abdulrazzaq Ba Deeb (Curtin University Malaysia) and Associate Professor Michael Dockery (Curtin University Perth).

Why am I being asked to take part and what will I have to do?

You have been asked to take part in this research because you fulfil the criteria of respondents that we are researching. We would like to know your experience with digital financial services, financial literacy and cultural dimensions. This study will take place at a mutually convenient location. We will ask you questions about your demographic profile, digital financial services experience, determinants of digital financial services and cultural dimensions. The questionnaire only needs to be completed once. Furthermore, the questionnaire will be distributed in-person and will be collected immediately once you have completed it. Completing the questionnaire will only take approximately 10 minutes.

There will be no cost for taking part in this research and you will not be paid for taking part. The data which is obtained from you will be non-identifiable. You will not be identified by name on the questionnaire or on any other information collected about you. Anonymity and confidentiality will always be maintained. You will not be identified in any results published or presented in conference papers, academic journals or book chapters. Only the research team will have access to the information we collect in this research and, in the event of an audit or investigation, staff from the Curtin University Office of Research and Development.

Are there any benefits' to being in the research project?

There may be no direct benefit to you from participating in this research. We hope the results of this research will allow us to assist the government, policymakers, educators, the banking sector

and non-governmental organizations towards achieving complete financial inclusion within Malaysia.

Are there any risks, side-effects, discomforts or inconveniences from being in the research project?

There are no foreseeable risks from this research project. We have been careful to make sure that the questions in the survey do not cause you any distress. However, if you feel anxious about any of the questions you do not need to answer them. Apart from giving up your time, we do not expect that there will be any risks or inconveniences associated with taking part in this study.

Who will have access to my information?

The information collected in this research will be non-identifiable (anonymous). This means that we do not need to collect individual names or information is anonymous and will not include a code number or name. No one, not even the research team will be able to identify your information. The following people will have access to the information we collect in this research: the research team and, in the event of an audit or investigation, staff from the Curtin University Office of Research and Development. Electronic data will be password-protected and hard copy data will be in locked storage. The information we collect in this study will be kept under secure conditions at Curtin University for 7 years after the research is published and then it will be destroyed.

Do I have to take part in the research project? Taking part in a research project is voluntary. It is your choice to take part or not. You do not have to agree if you do not want to. If you decide to take part and then change your mind, that is okay, you can withdraw from the project. You can choose to withdraw your participation prior to submitting your responses.

What happens next and who can I contact about the research?

At the start of the questionnaire there is a checkbox to indicate you have understood the information
provided here in the information sheet.

If you have any questions or concerns about the research, the following details the contact information of the Chief Investigator:

Chief Investigator: Dr Dhanuskodi Rengasamy
Address: School of Business, Universiti Curtin, CDT 250, 98009 Miri, Sarawak
Telephone No.: 60 85 630100
Email: dhanuskodi@curtin.edu.my

Concerns or complaints

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number HRE2019-0837). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email hrec@curtin.edu.au.

We would like to thank you in advance for your assistance with this research project.

c) Appendix 3: Questionnaire

Curtin University
Malaysia

Curtin Ethical Number:

HRE2019-0837

QUESTIONNAIRE

Research Topic:

DIGITAL FINANCIAL SERVICES ACCEPTANCE AMONG LOW-INCOME HOUSEHOLDS IN MIRI, SARAWAK: THE ROLE OF CULTURAL DIMENSIONS

Investigator:

CHRISTINE MENING NGAU
MASTER OF PHILOSOPHY (ECONOMICS AND FINANCE)
Faculty of Business
Curtin University, Malaysia

Dear Participant,

1. I would like to express my sincere thanks to you in advance, for contributing and giving feedback on my research questionnaire.
2. This survey seeks to **investigate the technology acceptance of Bank-led digital financial services** [Example: Mobile banking, Internet banking, Automated Teller Machine (ATM), Point of sale (POS) terminals, electronically enabled cards (Viz. Debit card, credit card, Master card etc)
3. Two key characteristics of Bank-led financial services are
    a. The bank provides financial services
    b. Financial services must be acceptable through digital channels

4. All information provided will be kept **STRICTLY CONFIDENTIAL** and used only for academic purposes.

Please read and tick the following box if you agree to participate in this study.

☐ I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

Brief description of digital financial services: Digital financial services consist of a range of bank-led financial services which are delivered through digital channels. Examples of bank-led digital financial services are mobile banking, Internet banking, Automated Teller Machine (ATM), Point of Sale (POS) terminals and electronically enabled cards (Viz. Debit card, credit card, Master card, etc.). All these channels allow people to send, receive and invest money as long as they have access to a mobile device or computer with access to the Internet.

Curtin University
Malaysia

Curtin Ethical Number:
HRE2019-0837

Dear Participant

If you fulfill *the following three criteria*, please continue. Otherwise, you can return the questionnaire.

1. **A Malaysian citizen**
2. **Total Household income between RM1,070 and RM 3,459**
3. **Head of Household [* Age 18 years and above * Married or unmarried * Main income earner of the family * income from employment or self-employment * living in Miri]**

SECTION A: DEMOGRAPHIC PROFILE

Please put **(√)** in the appropriate box that represents your answer.

1. Gender

☐ Male

☐ Female

2. Age

☐ 18-25 years old

☐ 26-33 years old

☐ 34-41 years old

☐ 42-49 years old

☐ 50 years old and above

3. State of origin

☐ Sarawak

☐ Other than Sarawak

4. Ethnicity

☐ Bumiputera

☐ Non-Bumiputera

5. Highest educational qualification

☐ Primary school education

☐ Secondary school education

☐ Diploma

☐ Undergraduate

☐ Postgraduate and above

SECTION B: DIGITAL FINANCIAL SERVICES EXPERIENCE

6. Which of the following digital financial service(s) do you currently use? You can choose more than one answer.

☐ Mobile banking

☐ Internet banking

☐ Automated Teller Machines (ATMs)

☐ Point of Sale (POS) terminals

☐ Electronically enabled cards (Debit/Credit cards)

☐ Others, please specify: _____

☐ I do not use digital financial services

7. How many times do you use digital financial services?

☐ Once daily

☐ 2-5 times daily

☐ 6-10 times daily

☐ More than 10 times daily

☐ Once in a week

☐ Once in a month

☐ I do not use digital financial services

8. How long have you used digital financial services?

☐ Less than 1 year

☐ 1 to 2 years

☐ 3 to 4 years

☐ 5 to 6 years

☐ More than 6 years

☐ I do not use digital financial services

SECTION C: DETERMINANTS OF BEHAVIORAL INTENTION TO ACCEPT DIGITAL FINANCIAL SERVICES

- This section seeks to identify the determinants of the behavioral intention to accept digital financial services.
- Please put **(√)** in the appropriate box that represents your answer.

	Strongly Disagree (1)	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
PERFORMANCE EXPECTANCY					
PE1. I think digital financial services are useful in my daily life.	☐	☐	☐	☐	☐
PE2. I think using digital financial services increases my chances of achieving things that are important to me.	☐	☐	☐	☐	☐
PE3. I think using digital financial services helps me to accomplish things faster.	☐	☐	☐	☐	☐
PE4. I think using digital financial services increases my productivity.	☐	☐	☐	☐	☐
FACILITATING CONDITIONS					
FC1. I think I have the resources necessary to use digital financial services	☐	☐	☐	☐	☐

FC2. I think I have the knowledge necessary to use digital financial services	☐	☐	☐	☐	☐
FC3. I think digital financial services are compatible with other technologies I use	☐	☐	☐	☐	☐
FC4. I think I can get help from others when I have difficulties using digital financial services.	☐	☐	☐	☐	☐
HEDONIC MOTIVATION					
HM1. I think the interactive features of digital financial services such as the ease of interface usage, game-based features and reward programs makes the experience fun.	☐	☐	☐	☐	☐
HM2. I think the personalized user experience that digital financial services provide makes the experience enjoyable.	☐	☐	☐	☐	☐
HM3. I think the overall experience of using digital financial services is very entertaining.	☐	☐	☐	☐	☐
	Strongly Disagree (1)	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
PRICE VALUE					
PV1. I think digital financial services are reasonably priced.	☐	☐	☐	☐	☐

PV2. I think digital financial services are worth the money.	☐	☐	☐	☐	☐
PV3. At the current price, spending on digital financial services is a good use of money.	☐	☐	☐	☐	☐
FINANCIAL LITERACY					
FL1. Financial institutions charge service fees on basic banking services.	☐	☐	☐	☐	☐
FL2. An investment with high return is likely to have high risks.	☐	☐	☐	☐	☐
FL3. High inflation rate means that cost of living also increases.	☐	☐	☐	☐	☐
FL4. I often compare and negotiate for lower prices before buying anything.	☐	☐	☐	☐	☐
FL5. When selecting a credit card, I choose the one with the lowest interest rate.	☐	☐	☐	☐	☐
FL6. I look for ways to increase and diversify my income.	☐	☐	☐	☐	☐
FL7. I have savings worth one-month salary that I can withdraw any time.	☐	☐	☐	☐	☐
FL8. I actively try to reduce my debts by paying it off regularly.	☐	☐	☐	☐	☐
FL9. In the last 12 months, my household income was enough to cover my living costs.	☐	☐	☐	☐	☐
BEHAVIORAL INTENTION					

BI1. I intend to use/continue using digital financial services in the future.	☐	☐	☐	☐	☐
BI2. I will always try to use/continue using digital financial services in my daily life.	☐	☐	☐	☐	☐
BI3. I plan to use/continue using digital financial services frequently.	☐	☐	☐	☐	☐

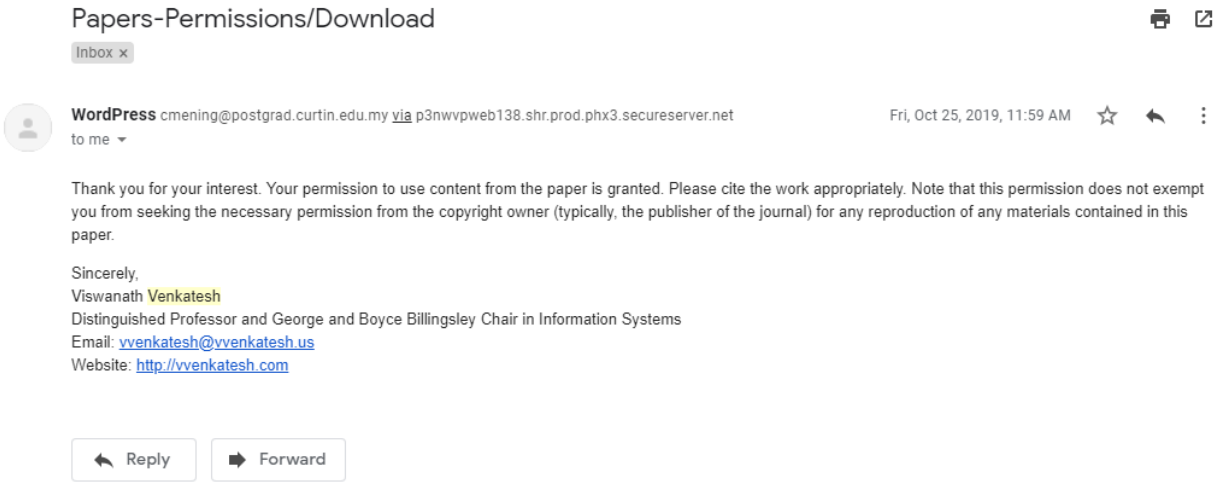
SECTION D: CULTURAL DIMENSIONS

- This section wants to know your opinion about your cultural dimensions. (Your reflection on culture such as norms, values, rules and beliefs.)
- Please put **(√)** in the appropriate box that represents your answer.

	Strongly Disagree (1)	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
POWER DISTANCE					
PD1. Most of the decisions made by the head of the family should be done by consulting family members.	☐	☐	☐	☐	☐
PD2. The head of family should consult family members for advice, because it will make him/her seem powerful.	☐	☐	☐	☐	☐
PD3. The decision-making responsibility should be shared among family members.	☐	☐	☐	☐	☐

PD4. It is acceptable for family members to question the decisions made by the head of the family.	☐	☐	☐	☐	☐
INDIVIDUALISM/COLLECTIVISM					
IC1: Being accepted as a family member is more important than having autonomy.	☐	☐	☐	☐	☐
IC2: Being accepted as a family member is more important than having independence.	☐	☐	☐	☐	☐
IC3. Achieving success as a group is more important than achieving success individually.	☐	☐	☐	☐	☐
IC4. It is more important to be loyal to a group than achieving individual benefits.	☐	☐	☐	☐	☐
IC5. Individual benefits are not as important as the group welfare.	☐	☐	☐	☐	☐
IC6. The head of the family should encourage loyalty towards the family among family members instead of encouraging individual initiative.	☐	☐	☐	☐	☐

d) Appendix 4: Permission to Use UTAUT2 Questionnaire



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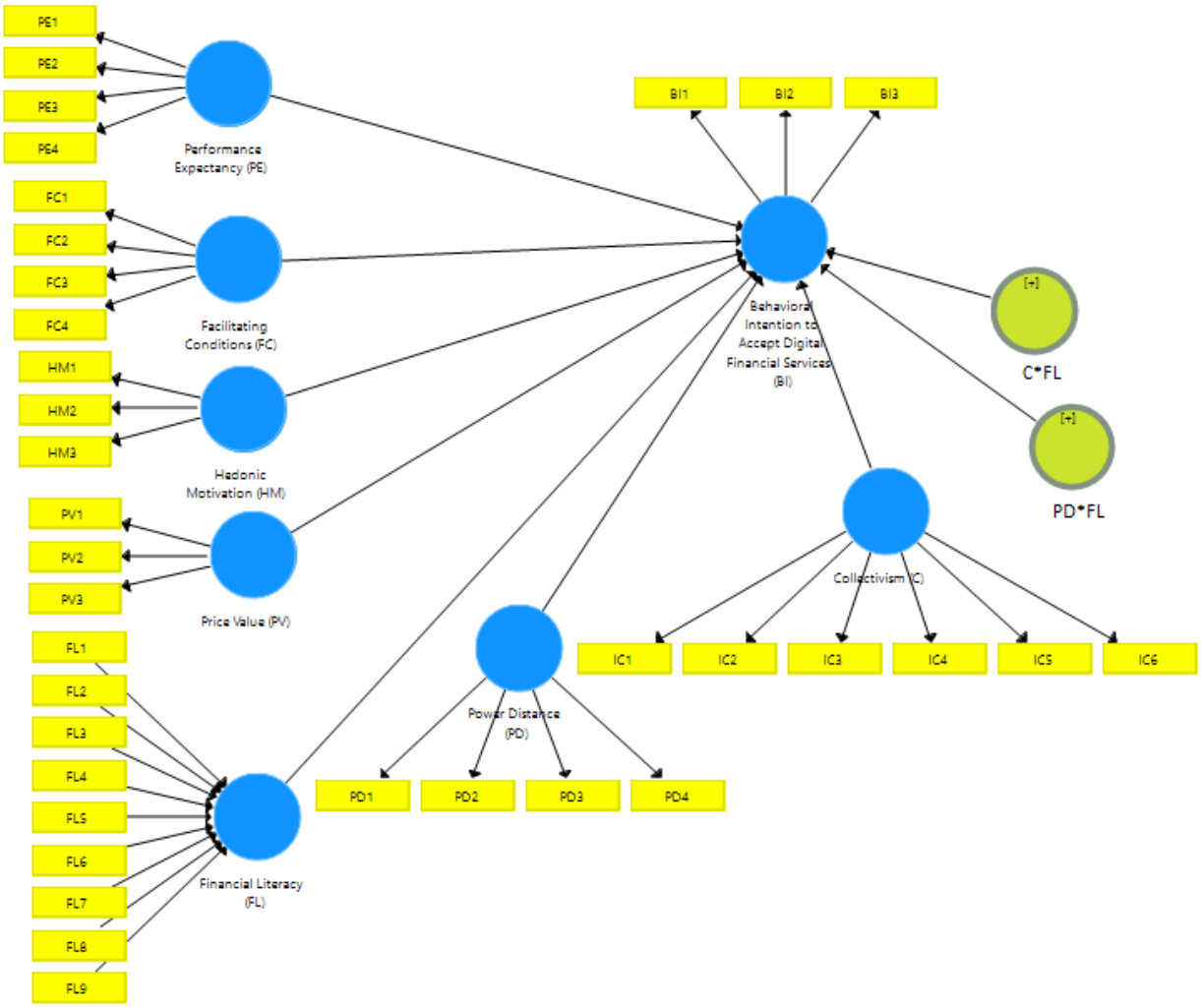
Sincerely,
Viswanath Venkatesh
Distinguished Professor and George and Boyce Billingsley Chair in Information Systems
Email: vvenkatesh@vvenkatesh.us
Website: http://vvenkatesh.com

Reply Forward

e) Appendix 5: Path Model for PLS-SEM



f) Appendix 6: Pilot Study Results

- **Measurement model assessment for reflective measures**

Constructs	Items	Outer Loadings
Behavioral Intention to Accept Digital Financial Services (BI)	BI1	0.924
	BI2	0.934
	BI3	0.731
Facilitating Conditions (FC)	FC1	0.774
	FC2	0.892
	FC3	0.615
	FC4	0.35
Hedonic Motivation (HM)	HM1	0.824
	HM2	0.787
	HM3	0.802
Collectivism (I/C)	IC1	0.548
	IC2	0.876
	IC3	0.802
	IC4	0.744
	IC5	0.316
	IC6	0.437
Power Distance (PD)	PD1	0.637
	PD2	0.802
	PD3	0.836
	PD4	0.547
Performance Expectancy (PE)	PE1	0.931
	PE2	0.689
	PE3	0.914
	PE4	0.636
Price Value (PV)	PV1	0.86
	PV2	0.787
	PV3	0.864

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Behavioral Intention to Accept Digital Financial Services (BI)	0.833	0.877	0.900	0.753
Collectivism (C)	0.724	0.832	0.801	0.426
Facilitating Conditions (FC)	0.590	0.697	0.767	0.473
Financial Literacy (FL)		1.000		
Hedonic Motivation (HM)	0.739	0.738	0.846	0.647
Performance Expectancy (PE)	0.813	0.894	0.876	0.645
Power Distance (PD)	0.679	0.698	0.803	0.512
Price Value (PV)	0.810	0.898	0.876	0.701

- **Measurement model assessment for formative measures**

Construct	Items	Outer Weights
Financial Literacy (FL)	FL1	-0.133
	FL2	0.473
	FL3	0.202
	FL4	-0.539
	FL5	0.431
	FL6	0.138
	FL7	-0.138
	FL8	0.483
	FL9	0.168

Construct	VIF
FL1	1.357
FL2	1.777
FL3	1.784
FL4	3.265
FL5	2.574
FL6	3.277
FL7	1.393
FL8	1.42
FL9	2.131

- **Normality Test: Skewness and Kurtosis Values (SPSS)**

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
PE1	-0.840	0.132	0.834	0.263
PE2	-0.862	0.132	1.650	0.263
PE3	-0.900	0.132	0.346	0.263
PE4	-0.712	0.132	0.384	0.263
FC1	-0.261	0.132	-0.053	0.263
FC2	-0.356	0.132	0.246	0.263
FC3	-0.413	0.132	0.543	0.263
FC4	-0.753	0.132	1.069	0.263
HM1	-0.380	0.132	0.116	0.263
HM2	-0.576	0.132	1.052	0.263
HM3	-0.446	0.132	0.110	0.263
PV1	-0.599	0.132	0.897	0.263
PV2	-0.325	0.132	0.501	0.263
PV3	-0.212	0.132	-0.024	0.263
FL1	-0.433	0.132	-0.113	0.263
FL2	-0.397	0.132	-0.024	0.263
FL3	-0.536	0.132	0.213	0.263
FL4	-0.456	0.132	-0.658	0.263
FL5	-0.718	0.132	0.461	0.263
FL6	-0.382	0.132	-0.840	0.263
FL7	-0.366	0.132	0.089	0.263
FL8	-0.677	0.132	0.484	0.263
FL9	-0.318	0.132	-0.155	0.263
BI1	-0.289	0.132	-0.572	0.263
BI2	-0.536	0.132	0.379	0.263
BI3	-0.491	0.132	0.236	0.263
PD1	-0.520	0.132	-0.246	0.263
PD2	-0.624	0.132	-0.133	0.263
PD3	-0.616	0.132	0.391	0.263
PD4	-0.698	0.132	0.809	0.263
IC1	-0.667	0.132	0.790	0.263
IC2	-0.502	0.132	-0.078	0.263
IC3	-0.382	0.132	-0.190	0.263

IC4	-0.214	0.132	-0.598	0.263
IC5	-0.314	0.132	-0.233	0.263
IC6	-0.389	0.132	-0.223	0.263

- **Mean and standard deviation (SPSS)**

Descriptive Statistics			
	N	**Mean**	**Std. Deviation**
	Statistic	**Statistic**	**Statistic**
PE1	343	4.318	0.706
PE2	343	4.032	0.796
PE3	343	4.385	0.699
PE4	343	4.181	0.766
FC1	343	3.988	0.684
FC2	343	3.959	0.724
FC3	343	4.032	0.694
FC4	343	3.927	0.793
HM1	343	3.656	0.874
HM2	343	3.895	0.726
HM3	343	4.023	0.757
PV1	343	3.729	0.823
PV2	343	3.767	0.732
PV3	343	3.773	0.792
FL1	343	3.420	0.936
FL2	343	3.904	0.820
FL3	343	4.079	0.759
FL4	343	4.090	0.820
FL5	343	4.090	0.835
FL6	343	4.152	0.765
FL7	343	3.612	0.923
FL8	343	4.102	0.771
FL9	343	3.566	0.921
BI1	343	4.181	0.673
BI2	343	4.134	0.721
BI3	343	3.930	0.828
PD1	343	4.239	0.698
PD2	343	3.851	0.957
PD3	343	4.207	0.718

PD4	343	3.994	0.806
IC1	343	3.971	0.802
IC2	343	3.883	0.867
IC3	343	3.907	0.815
IC4	343	3.904	0.794
IC5	343	3.434	0.965
IC6	343	3.915	0.788

- **Demographic Data (SPSS)**

GENDER					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	118	34.4	34.4	34.4
	2	225	65.6	65.6	100.0
	Total	343	100.0	100.0	

AGE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	69	20.1	20.1	20.1
	2	151	44.0	44.0	64.1
	3	70	20.4	20.4	84.5
	4	31	9.0	9.0	93.6
	5	22	6.4	6.4	100.0
	Total	343	100.0	100.0	

STATE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	333	97.1	97.1	97.1
	2	10	2.9	2.9	100.0
	Total	343	100.0	100.0	

ETHNICITY				
	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	1	294	85.7	85.7	85.7
	2	49	14.3	14.3	100.0
	Total	343	100.0	100.0	

HIGHESTEDU					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	3.5	3.5	3.5
	2	103	30.0	30.0	33.5
	3	111	32.4	32.4	65.9
	4	102	29.7	29.7	95.6
	5	15	4.4	4.4	100.0
	Total	343	100.0	100.0	

MBANKING					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	124	36.2	36.2	36.2
	1	219	63.8	63.8	100.0
	Total	343	100.0	100.0	

INTBANKING					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	97	28.3	28.3	28.3
	1	246	71.7	71.7	100.0
	Total	343	100.0	100.0	

ATMS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	96	28.0	28.0	28.0
	1	247	72.0	72.0	100.0
	Total	343	100.0	100.0	

POS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	289	84.3	84.3	84.3
	1	54	15.7	15.7	100.0
	Total	343	100.0	100.0	

EECARDS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	128	37.3	37.3	37.3
	1	215	62.7	62.7	100.0
	Total	343	100.0	100.0	

OTHERS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	343	100.0	100.0	100.0

NOUSEDFS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	336	98.0	98.0	98.0
	1	7	2.0	2.0	100.0
	Total	343	100.0	100.0	

FREQUSE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	48	14.0	14.0	14.0
	2	92	26.8	26.8	40.8
	3	19	5.5	5.5	46.4
	4	5	1.5	1.5	47.8
	5	112	32.7	32.7	80.5
	6	60	17.5	17.5	98.0
	7	7	2.0	2.0	100.0
	Total	343	100.0	100.0	

PERIODUSE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	5.8	5.8	5.8
	2	43	12.5	12.5	18.4
	3	88	25.7	25.7	44.0
	4	55	16.0	16.0	60.1
	5	130	37.9	37.9	98.0
	6	7	2.0	2.0	100.0
	Total	343	100.0	100.0	

- **Harman's Single Factor Test Results (SPSS)**

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.077	25.214	25.214	8.394	23.318	23.318
2	3.270	9.083	34.297			
3	2.011	5.586	39.883			
4	1.937	5.379	45.262			
5	1.704	4.734	49.997			
6	1.415	3.929	53.926			
7	1.220	3.389	57.315			
8	1.170	3.251	60.565			
9	1.053	2.926	63.491			
10	0.934	2.594	66.086			
11	0.851	2.364	68.450			
12	0.837	2.325	70.774			
13	0.771	2.142	72.916			
14	0.724	2.012	74.928			
15	0.676	1.878	76.806			
16	0.645	1.793	78.599			

17	0.609	1.692	80.291			
18	0.568	1.577	81.868			
19	0.547	1.519	83.387			
20	0.531	1.474	84.861			
21	0.510	1.416	86.277			
22	0.496	1.379	87.656			
23	0.447	1.243	88.899			
24	0.437	1.214	90.113			
25	0.407	1.129	91.242			
26	0.389	1.079	92.322			
27	0.358	0.996	93.317			
28	0.343	0.953	94.271			
29	0.336	0.934	95.205			
30	0.312	0.866	96.070			
31	0.287	0.797	96.867			
32	0.254	0.707	97.574			
33	0.252	0.700	98.275			
34	0.233	0.647	98.921			
35	0.215	0.598	99.520			
36	0.173	0.480	100.000			
Extraction Method: Principal Axis Factoring.						

- **Full Multicollinearity Test: Outer and Inner VIF Values for Common Method Bias**

	OUTER VIF	INNER VIF
BI1	2.665	NA
BI2	2.787	
BI3	1.754	
FC1	1.674	2.461
FC2	1.642	
FC3	1.561	
FC4	1.221	
FL1	1.205	1.373
FL2	1.526	
FL3	1.471	
FL4	1.308	
FL5	1.373	
FL6	1.275	
FL7	1.361	

FL8	1.455	
FL9	1.257	
HM1	1.57	1.847
HM2	1.874	
HM3	1.573	
IC1	1.75	1.214
IC2	1.867	
IC3	1.74	
IC4	1.98	
IC5	1.444	
IC6	1.407	
PD1	1.55	1.287
PD2	1.317	
PD3	1.783	
PD4	1.617	
PE1	1.998	2.075
PE2	1.843	
PE3	1.95	
PE4	2.301	
PV1	2.023	1.409
PV2	2.204	
PV3	1.476	

g) Appendix 7: PLS-SEM Outputs

- **Outer loadings**

	Behavioral Intention to Accept Digital Financial Services (BI)	Collectivism (C)	Facilitating Conditions (FC)	Financial Literacy (FL)	Hedonic Motivation (HM)	Performance Expectancy (PE)	Power Distance (PD)	Price Value (PV)
BI1	0.906							
BI2	0.908							
BI3	0.835							
FC1			0.829					
FC2			0.831					
FC3			0.78					
FC4			0.557					
FL1				0.261				
FL2				0.446				
FL3				0.715				
FL4				0.506				

FL5				0.364				
FL6				0.692				
FL7				0.337				
FL8				0.736				
FL9				0.367				
HM1					0.794			
HM2					0.858			
HM3					0.846			
IC1		0.568						
IC2		0.618						
IC3		0.745						
IC4		0.81						
IC5		0.728						
IC6		0.7						
PD1							0.801	
PD2							0.737	
PD3							0.788	
PD4							0.752	
PE1						0.85		
PE2						0.796		
PE3						0.789		
PE4						0.866		
PV1								0.832
PV2								0.884
PV3								0.825

- **Composite reliability and Average Variance Extracted**

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Behavioral Intention to Accept Digital Financial Services (BI)	0.859	0.863	0.914	0.781
Collectivism (C)	0.793	0.814	0.85	0.489
Facilitating Conditions (FC)	0.751	0.795	0.841	0.574
Financial Literacy (FL)		1		
Hedonic Motivation (HM)	0.781	0.792	0.872	0.695
Performance Expectancy (PE)	0.844	0.852	0.895	0.682
Power Distance (PD)	0.772	0.778	0.853	0.593
Price Value (PV)	0.805	0.815	0.884	0.718

- **Cross loading values**

	Behavioral Intention to Accept Digital Financial Services (BI)	Facilitating Conditions (FC)	Financial Literacy (FL)	Hedonic Motivation (HM)	Collectivism (C)	Power Distance (PD)	Performance Expectancy (PE)	Price Value (PV)
BI1	**0.906**	0.538	0.459	0.479	0.211	0.264	0.579	0.372
BI2	**0.908**	0.523	0.402	0.450	0.189	0.266	0.544	0.347
BI3	**0.835**	0.465	0.418	0.458	0.183	0.254	0.491	0.384
FC1	0.500	**0.829**	0.355	0.523	0.135	0.191	0.662	0.318
FC2	0.518	**0.831**	0.351	0.501	0.154	0.202	0.555	0.338
FC3	0.419	**0.780**	0.304	0.507	0.169	0.181	0.481	0.477
FC4	0.250	**0.557**	0.175	0.335	0.307	0.192	0.333	0.413
HM1	0.390	0.452	0.299	**0.794**	0.183	0.156	0.409	0.366
HM2	0.412	0.533	0.319	**0.858**	0.113	0.193	0.475	0.393
HM3	0.494	0.564	0.342	**0.846**	0.150	0.204	0.484	0.412
IC1	0.108	0.171	0.135	0.120	**0.568**	0.316	0.103	0.197
IC2	0.096	0.124	0.134	0.135	**0.618**	0.314	0.089	0.115
IC3	0.157	0.167	0.156	0.093	**0.745**	0.228	0.164	0.039
IC4	0.194	0.168	0.205	0.120	**0.810**	0.326	0.162	0.053
IC5	0.177	0.168	0.078	0.153	**0.728**	0.187	0.098	0.099
IC6	0.160	0.150	0.187	0.137	**0.700**	0.342	0.159	0.035
PD1	0.256	0.258	0.314	0.223	0.260	**0.801**	0.231	0.184
PD2	0.248	0.157	0.165	0.194	0.359	**0.737**	0.140	0.142
PD3	0.201	0.189	0.287	0.120	0.264	**0.788**	0.180	0.063
PD4	0.192	0.144	0.215	0.128	0.334	**0.752**	0.176	0.110
PE1	0.555	0.596	0.406	0.479	0.186	0.242	**0.850**	0.323
PE2	0.487	0.557	0.323	0.458	0.229	0.177	**0.796**	0.287
PE3	0.429	0.510	0.316	0.390	0.099	0.198	**0.789**	0.241
PE4	0.532	0.605	0.359	0.478	0.102	0.166	**0.866**	0.320
PV1	0.290	0.400	0.264	0.355	0.122	0.132	0.280	**0.832**
PV2	0.365	0.421	0.266	0.390	0.077	0.206	0.323	**0.884**
PV3	0.387	0.413	0.253	0.439	0.094	0.091	0.302	**0.825**

- **Fornell and Larcker Criterion**

	Behavioral Intention to Accept Digital Financial Services (BI)	Collectivism (C)	Facilitating Conditions (FC)	Hedonic Motivation (HM)	Performance Expectancy (PE)	Power Distance (PD)	Price Value (PV)
Behavioral Intention to Accept Digital Financial Services (BI)	0.884						
Collectivism (C)	0.22	0.699					
Facilitating Conditions (FC)	0.577	0.225	0.758				
Hedonic Motivation (HM)	0.523	0.177	0.623	0.833			
Performance Expectancy (PE)	0.61	0.188	0.689	0.549	0.826		
Power Distance (PD)	0.296	0.395	0.247	0.223	0.237	0.77	
Price Value (PV)	0.416	0.113	0.486	0.47	0.357	0.168	0.847

- **Heterotrait-Monotrait Ratio of Correlations (HTMT)**

	Behavioral Intention to Accept Digital Financial Services (BI)	Collectivism (C)	Facilitating Conditions (FC)	Hedonic Motivation (HM)	Performance Expectancy (PE)	Power Distance (PD)
Behavioral Intention to Accept Digital Financial Services (BI)						
Collectivism (C)	0.256					
Facilitating Conditions (FC)	0.693	0.331				
Hedonic Motivation (HM)	0.633	0.228	0.799			
Performance Expectancy (PE)	0.711	0.223	0.838	0.67		
Power Distance (PD)	0.357	0.518	0.325	0.275	0.291	
Price Value (PV)	0.494	0.161	0.656	0.584	0.428	0.205

- **Outer VIF Values for Financial Literacy**

	OUTER VIF
FL1	1.205
FL2	1.526
FL3	1.471
FL4	1.308
FL5	1.373
FL6	1.275
FL7	1.361
FL8	1.455
FL9	1.257

- **Outer Weights of Formative Indicators**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
FL1 -> Financial Literacy (FL)	0.014	0.006	0.106	0.130	0.448
FL2 -> Financial Literacy (FL)	0.050	0.058	0.114	0.437	0.331
FL3 -> Financial Literacy (FL)	0.442	0.429	0.124	3.574	0.000
FL4 -> Financial Literacy (FL)	0.112	0.094	0.128	0.872	0.192
FL5 -> Financial Literacy (FL)	-0.123	-0.113	0.115	1.074	0.142
FL6 -> Financial Literacy (FL)	0.422	0.397	0.125	3.368	0.000
FL7 -> Financial Literacy (FL)	-0.014	-0.007	0.124	0.116	0.454
FL8 -> Financial Literacy (FL)	0.431	0.415	0.111	3.902	0.000
FL9 -> Financial Literacy (FL)	0.115	0.112	0.122	0.942	0.173

- **Outer Loadings of Formative Indicators**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
FL1 -> Financial Literacy (FL)	0.261	0.253	0.097	2.697	0.004
FL2 -> Financial Literacy (FL)	0.446	0.426	0.100	4.454	0.000
FL3 -> Financial Literacy (FL)	0.715	0.685	0.088	8.142	0.000
FL4 -> Financial Literacy (FL)	0.506	0.478	0.103	4.896	0.000
FL5 -> Financial Literacy (FL)	0.364	0.347	0.106	3.433	0.000
FL6 -> Financial Literacy (FL)	0.692	0.664	0.080	8.663	0.000
FL7 -> Financial Literacy (FL)	0.337	0.324	0.104	3.239	0.001
FL8 -> Financial Literacy (FL)	0.736	0.702	0.072	10.211	0.000
FL9 -> Financial Literacy (FL)	0.367	0.356	0.107	3.431	0.000

- **Inner VIF Values**

	Behavioral Intention to Accept Digital Financial Services (BI)
Behavioral Intention to Accept Digital Financial Services (BI)	
Collectivism (C)	1.214
Facilitating Conditions (FC)	2.461
Financial Literacy (FL)	1.373
Hedonic Motivation (HM)	1.847
Performance Expectancy (PE)	2.075
Power Distance (PD)	1.287
Price Value (PV)	1.409

- **Structural Model Results**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Collectivism (C) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.030	0.038	0.042	0.711	0.239
Facilitating Conditions (FC) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.133	0.139	0.063	2.097	0.018

Financial Literacy (FL) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.186	0.215	0.049	3.838	0.000
Hedonic Motivation (HM) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.127	0.123	0.058	2.189	0.015
Performance Expectancy (PE) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.307	0.290	0.065	4.749	0.000
Power Distance (PD) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.072	0.067	0.046	1.576	0.058
Price Value (PV) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.109	0.107	0.050	2.190	0.014

- **Confidence Bias Interval Bias Corrected Results**

	Original Sample (O)	Sample Mean (M)	Bias	5.00%	95.00%
Collectivism (C) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.030	0.038	0.008	-0.048	0.092
Facilitating Conditions (FC) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.133	0.139	0.006	0.021	0.227
Financial Literacy (FL) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.186	0.215	0.029	0.087	0.239
Hedonic Motivation (HM) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.127	0.123	-0.004	0.033	0.228
Performance Expectancy (PE) -> Behavioral Intention to Accept	0.307	0.290	-0.018	0.229	0.427

Digital Financial Services (BI)					
Power Distance (PD) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.072	0.067	-0.005	0.006	0.153
Price Value (PV) -> Behavioral Intention to Accept Digital Financial Services (BI)	0.109	0.107	-0.002	0.036	0.190

- **R Square**

	R Square	R Square Adjusted
Behavioral Intention to Accept Digital Financial Services (BI)	0.494	0.484

- **F Square**

	Behavioral Intention to Accept Digital Financial Services (BI)
Behavioral Intention to Accept Digital Financial Services (BI)	
Collectivism (C)	0.001
Facilitating Conditions (FC)	0.014
Financial Literacy (FL)	0.050
Hedonic Motivation (HM)	0.017
Performance Expectancy (PE)	0.090
Power Distance (PD)	0.008
Price Value (PV)	0.017

- **Q Square**

	SSO	SSE	Q^2 (=1-SSE/SSO)
Behavioral Intention to Accept Digital Financial Services (BI)	1029	649.717	0.369
Collectivism (C)	2058	2058	
Facilitating Conditions (FC)	1372	1372	
Financial Literacy (FL)	3087	3087	
Hedonic Motivation (HM)	1029	1029	
Performance Expectancy (PE)	1372	1372	
Power Distance (PD)	1372	1372	
Price Value (PV)	1029	1029	

- **New R Square with Addition of Moderation Effect**

	R Square	R Square Adjusted
Behavioral Intention to Accept Digital Financial Services (BI)	0.498	0.484

- **F Square of Moderating Constructs**

	Behavioral Intention to Accept Digital Financial Services (BI)
Behavioral Intention to Accept Digital Financial Services (BI)	
C * FL	0.007
PD * FL	0.002

- **Interaction Effects for Moderating Constructs**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
C * FL -> Behavioral Intention to Accept Digital Financial Services (BI)	-0.064	-0.060	0.044	1.474	0.071
PD * FL -> Behavioral Intention to Accept Digital Financial Services (BI)	0.039	0.045	0.042	0.949	0.172