

DETERMINANTS OF CONTACTLESS PAYMENT
ADOPTION IN MALAYSIA

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DECLARATION

We hereby declare that:

1. This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.
2. No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.
3. Equal contribution of work has been made by each group member in completing this research project.
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PREFACE

The title of this research project is “Determination of adoption contactless payment in Malaysia”. This research paper is an obligation for the undergraduate students of Business Administration (Hons) Banking and Finance for completion of the study. The subject code of UBFZ 3026 Research Project and this is a compulsory subject that need to be taken by every final year student.

Recently, in this fast pace of technology advancement, the products and services in financial services industry has been evolved with the technology to compete in the market. Contactless payment nowadays has gained its attention worldwide and become more and more prominent. Contactless payment can be defined as “wave & pay” payment method. NFC and RFID are both technology than embedded into contactless payment devices that provides people fast, convenient and simple as one of the payment method. Although contactless payment has being widespread around the world, which enrich people life and provide efficiency and convenience in the financial market. However, the adoption of contactless payment in Malaysia’ context is still in the infancy stage and the adoption rate is considered low as compared to other developed countries. Therefore, it is crucial for us to conduct this research and discover the factors such as perceived ease of use, perceived security, perceived usefulness, social influence and compatibility that affect the adoption of contactless payment in Malaysia.

We had study through the past studies that have been conducted in order to have deeper understanding of the relationship between the selected independent variables towards the adoption of contactless payment in Malaysia. Other than study factors itself, we have also focus on the demographic profile whether there is a relationship towards the adoption of contactless payment in Malaysia’ context. In the other hands, we are sincerely thanks to Mr. Chong Tun Pin that willing to become our supervisor who giving fully support and encourage us to complete this research project.

ABSTRACT

Problem Statement: Contactless payment provides “wave & pay” as a mode of payment which efficient and convenience in the market. Although contactless payment has been introduced for few years ago, but the adoption of contactless payment in Malaysia is considered low. In addition, most Malaysian from outskirts area preferred to use cash and card. In short, Malaysia need to overcome this obstacle and aim to move forward to cashless platform in the futures.

Methodology: Unified Theory of Acceptance and Use of Technology (UTAUT), Diffusion of Innovation (DOI) and Risky Technology Adoption Models (RTA) have been used to study the intention to adopt contactless payment. In this research project, there are total 419 questionnaires are distributed randomly for Malaysian. Additionally, several analyses used are Descriptive Analysis, Reliability Test, Pearson Correlation Coefficient, Multiple Linear Regression Analysis, Independent Sample t-test and One-way ANOVA.

Findings: According to Reliability Test, the cronbach’s alpha value that more than 0.7 indicates that all the variable are reliable. Besides, Pearson’s Correlation’ resulted a positive relationship among all of the independent variables towards dependent variables. In contrary, perceived security and social influence being removed from multi regression model since p-value are greater than 0.05 which indicates that there is an insignificant relationship between perceived security and social influence towards the intention to adopt contactless payment in Malaysia.

Implication: The government shall undertakings various programs to enable the availability of contactless payment terminals especially in rural parts. Further identify on the consumer’s behavior in adopting contactless payment in different time frame can be conduct due to different time frame might get different results. The researchers may enhance their understanding on consumer’s behavior in adopting new technology in the current trend and can also help in identifying the technique of attracting the non-user of contactless payment to become a user.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The main discussion in this chapter comprised of simple introduction for technology and contactless payment system. From the research background, it can know some history and advancement of technology. Then, this study will also try to study the problem statements which might happen in the real market and at the same time the research objective will be set to ensure that this research is following the sequence. Besides, this study will also list out research question and hypothesis of study for analysis purpose. In addition, significant of study will shows consumer how the important of this study to them and follow with the chapter layout. Last but not least, a conclusion will also be made.

1.1 Research Background

1.1.1 Development of FinTech

According to Cambridge dictionary define that “financial” is involving to cash or the way money been managed. In another words, “financial” must have the purpose of making profit. According to Oxford dictionary define “technology” as the application of systematic knowledge for practical purpose. However, the implement of technology into financial industry is used to replace the traditional methodology. Therefore, with the combination of “financial” and innovative technology, there is a term called “FinTech” has been generated. According to Zavolokina, Dolata and Schwabe (2016) study stated that FinTech representative financial industry

that intervened by innovative technology which to fulfil the financial requirements such as reducing cost, enhancing business process and increasing efficiency and profitability.

In the last 65 years, fintech is keep on innovating and evaluating. Essentially, fintech have been develop since 1950s where the first credit cards have introduced in United Stated – New York to decrease the burden of carrying money (MacDonald & Tompkins, 2017). Following in 1960s, the introduced of ATMs brought to the replacement of bankers and branches. While in the 1990s, the introduced of new business models where the combination of internet and business had created E-commerce (Desai, 2016). However, the innovation of fintech until today has introduced more digitized products which including online banking, e-payment, mobile payment, digital smartcard and the latest is contactless payment.

Thus, the introduced of fintech had make people life easier, faster and more convenience and secure instead of using traditional payment method. Moreover, fintech also shows a significantly increasing around the world over the past few years especially for the contactless payment where more and more banking industries had starts to invest in this payment propositions (Durevall, 2016). Additionally, the highlight of contactless payment is that “wave and pay” payment method where consumer can make payment by just wave their cards or NFC-enabled device at a POS terminal (Vishwanathan, 2017). The feature of contactless payment which no required of signature and PIN enter is used to help consumer in time saving purpose.

As conclusion, the global trend nowadays is more likely to become cashless and also due to the fintech products in the market are probably efficient and

user friendly. Therefore, the rapidly implementation of fintech in global market will help in enhancing consumer's payment satisfaction and highly replacing the traditional payment method especially cash and cheques.

1.1.2 History of contactless payment

Contactless payment cards such as debit, credit and smartcards is the contactless payment which customer can just "wave and pay" for payment were introduced in the UK in 2007 by Barclay and named Barclaycard. Barclaycards also the pioneer contactless card launched in Britain (David, 2015). Debit, credit and smartcards is the first method used a medium for contactless payment in completing the payment transaction.

According to David (2015), the first mobile contactless payment takes place on year 2007 where mobile or smartphone are built-in with contactless payment card technology and piloted in London. In the same year, mobile money transfer had been develop by western union partner with GSMA. Based on John (2016), iPhone and androids operating system are released on the year 2007. He also estimated that there will be 90 percent of the smartphone users will make payment through mobile in the year 2017. In year 2011 Starbucks started to accept mobile payment to make it convenience to customer who do not always carry cash and make it worldwide available. Matt (2012) state that on the same year 2011 which is the launching of the google wallet an application used mobile to make payment. The contactless payment application has been launched in 2013 and being use worldwide such as Apple Pay, Samsung Pay and etc. In future, NFC or mobile contactless payment will slowly replace the cards and the cash in the wallet. The whole world will make payment by simply a tap away.

Contactless payment smartwatch allow users complete the daily transaction through the watch that they are wearing which mean that they do not need to get card or cash ready at the payment terminal (Micheal, 2016). In the year 2014, Barclays had come out with the idea of replacing mobile payment with a wearable payment such as wristband and watches (David, 2015). Barclays had launch contactless payment watches with several watch brands. In year 2017, it collaborated with Timex to launch the Timex Fairfield contactless watches which had expanded the range of contactless-enabled watches. (bPay to launch contactless payment watches, 2018). Besides that, bPays are now working with Visa's partner Tappy to embed bPay chip into bPay's brand partners' products.

1.1.3 The evolution of the payment method

Barter System

At the history of payment method, the first known payment method is barter system. They directly trade the goods or service with other people who has the product or services they want at the equivalent value. But most of the times, people cannot get what they really want. Because the value of the goods is not clearly stated.

Coin

Around 1100 before Christ (B.C), China was found that using the circled objects as the medium of trading. This is the origin of the coin and was the first legal coin ever recorded in the world.

Cheque

Time fly to 13th century Venice, the concept of cheque was found (Barclays News, 2018). The aim of create the cheque is to make people trade easily

without bring large amounts of silver or gold. Furthermore, cheque also allow the customers making payments to a third party without withdrawing money themselves. The concept of cheque brings a lot of convenience to users and get the majority acceptable. At the end of 1990's, the usage of cheque was reached its most popular period which over 11 million being issued each day. The usage of cheque is expected to reduce rapidly over the yeas especially now a day (Francis, 2016).

Credit Card

The history of credit card can chase back to 5000 years when the ancient Mesopotamians used clay tablets to conduct trade with the Harappan civilization according to historian Jonathan Kenoyer (Tompkins, 2017). The original concept of credit card concept is to use a valueless material to represent banking transactions dates. After that credit card is use to extend the credit and delay payment.

According to Frellick (2011), Bank of America was first step in the area of the true credit card in 1958. Bank of America mailing unsolicited BankAmericard credit cards to select California markets. While in the 1966, BankAmericard nationalization and become the nation's first licensed general-purpose credit card. After that the card was renamed and become the world most famous credit card company, Visa. Also in 1966, an association named Intercank Card Association (ITC) which grouping by California banks would also issue the nation's second major bank card, MasterCard. Another important incident makes credit card more secure and popular is at 1960. While in the Magnetic Stripe Technology (n.d.), International Business Machines Corporation (IBM) introduced a new technology called magnetic stripe verification to credit cards, and technological innovations have occasionally stolen centre stage in the

cashless payment play.

Digital payment

Nowadays, traditional payment method was slowly replaced by online payment. With the rise of internet, business transaction can straight away settle by internet. Users are more prefer on cashless payment method. By evolution of radio-frequency identification (RFID) and Near-Field Communication (NFC) contactless payment method was introduce. This contactless payment method was more convenience and easier to use (History of Mobile and Contactless Payment Systems, 2017).

1.1.4 Contactless Payment in Malaysia

Touch' n Go was the first launched contactless payment system with using RFID technology in the contactless card for consumers to make payment in Malaysia. Touch' n Go has launched the first contactless payment system at Metramac Highway in March 1997 (Touch 'n Go, 2018). After that, it continues to expand the contactless payment service to PLUS Expressways. Touch' n Go first was only can use at Metramac Highway and PLUS Expressways. However, Touch' n Go has successfully expand their services as the Common Ticketing System operator for public transportation such as LRT, KTM Komuter, and bus in 2002. Consumers can just wave their Touch' n Go card at the reader to pay for the ticket without entering any pin. Today, Touch' n Go card was a common contactless payment method used by consumers in Malaysia.

In 2005, Maybank has launch the first contactless credit card, Maybankard Visa Wave which allows cardholders to make their purchases by simply wave their contactless credit card at the reader of payment (Maybank

Launches Contactless Payment, 2005). The Maybankard Visa Wave is the first contactless credit card in Malaysia with full Visa Wave contactless functionality and also known as Visa Paywave. Start from June 2005, all of the cardholders are able to perform contactless payment on their purchases at about 4000 merchant including restaurants, cinemas, petrol stations and even supermarkets (Visa goes contactless in Malaysia, 2005). According to Press Releases (2014), Petronas was the first petrol company in Malaysia that accept Visa Paywave contactless payment services. While in 2006, Mastercard International cooperated with bank to launch their contactless payment services, the Mastercard Paypass (Malaysians Can Now “Tap & Go”, 2006). Malaysia merchants such as supermarkets, apparel and footwear boutiques, and restaurant and transportation providers has accepted the Mastercard Paypass.

Other than contactless credit card, consumers also able to perform contactless payment by using NFC-enabled mobile phone in Malaysia. The first contactless mobile payment service in Malaysia was launched by Maxis Communications Bhd together with partners Nokia, Maybank, Visa and Touch’ n Go, the Maxis FastTap. Maxis FastTap is the first contactless mobile payment service by using Visa Paywave over NFC-enabled mobile phones (The SunDaily, 2009). In 2016, Maybank and CIMB Bank also introduce their own contactless payment service which is Maybank Pay and CIMB Pay (The Star Online, 2016a; The Star Online, 2016b). Maybank Pay and CIMB Pay both enable their customers to make contactless payment via NFC-enabled mobile without using any physical credit and debit card. This is very convenience for Malaysians since almost half and above of Malaysians have a smartphone. In 2017, Samsung Malaysia Electronics also partners with Maybank to announce a new contactless payment services which is Samsung Pay (Press Release, 2017). The function of Samsung Pay

is similar to Maybank Pay and CIMB Pay, but Samsung Pay is only available on Samsung NFC-enabled smartphone such Galaxy Note 8, Galaxy S8, Galaxy S7 and others, while Maybank Pay and CIMB Pay is available on all of the smartphone which has NFC technology. Today, there are several banks such as CIMB Bank, CitiBank, Public Bank, RHB Bank, Hong Leong Bank, and Standard Chartered Bank have joined as partners for Samsung's contactless payment service, which is Samsung Pay.

Besides that, the users of Samsung Pay also can use the Samsung Gear S3 to make contactless payment on their purchase. The Samsung Gear S3 is a smartwatch with NFC technology that supports Samsung Pay. Samsung Malaysia Electronics officially announce in 2017 that Samsung Gear S3 is supports Samsung Pay in Malaysia. However, the first contactless wearable in Malaysia is Maybank Visa Payband which introduced by Visa and Maybank in 2016 (Visa, 2016). Maybank Visa Payband allowed customers to make contactless payment just by waving the Payband on the payment reader.

Table 1.1.1: List of Contactless Payment in Malaysia

Banking Sector				
No	Bank	Contactless Card	NFC-Enabled Mobile	Wristband & Gear
1.	Affin Bank	√		
2.	Alliance Bank	√		
3.	AmBank	√		
4.	CIMB Bank	√	√ _{S,C}	√ _S
5.	Citibank	√	√ _S	√ _S
6.	HSBC Bank	√		
7.	Hong Leong Bank	√	√ _S	√ _S
8.	Maybank	√	√ _{S,M}	√ _{S,M}
9.	OCBC Bank	√		
10.	Public Bank	√	√ _S	√ _S
11.	RHB Bank	√	√ _S	√ _S
12.	Standard Chartered Bank Malaysia	√	√ _S	√ _S
Non-Banking Sector				
1	Touch 'n Go	√	√ _{MFT}	

Remark:

S = Samsung Pay

C = CIMB Pay

M = Maybank Pay

MFT = Maxis FastTap

1.2 Problem Statement

Although Near Field Communication (NFC) technology was introduced for few years, but it is still at a beginning stage in Malaysia. According to Balachandran (2015), despite of use of mobile technologies has been rapid growth but using the NFC-enabled mobile devices to make payment is still fresh to consumers in Malaysia. In Malaysia, the contactless payment system not only available for touch 'n go but also available to the bank debit and credit cards after Central Bank of Malaysia announced to replace all ATM cards to become PIN-based cards since 2016 (Bank Negara Malaysia, 2016). The PIN-based cards of CIMB bank, Public Bank, Maybank, RHB Bank and other banks was accepted for contactless payment function and the stores in Malaysia which provides the contactless payment option is including AEON BIG, TGV Cinemas, McDonald's, Golden Screen Cinemas, Starbucks and others (Joifin, 2018).

Although Malaysians are more preferring mobile payments nowadays, however, cash and card payment still enjoy the higher demand in the market. Additionally, Joel Tay who represents CEO of Soft Space Sdn Bhd which provides the mobile payment services since 2012 said that payment landscape in Malaysia is dull in comparison with Southeast Asia. Other than that, the contactless payment method still not available at everywhere. For instance, the stores like mamak restaurant or small grocery store are still dependents on cash rather than uses electronic payment. Besides, Malaysian that stay outskirts area are still much more dependents on cash rather than using contactless payment method (Nair, 2017).

According to a survey 'Visa consumer payment attitude 2016' conducted by Visa Company stated that 60% of respondents is more comfortable with using biometrics such as fingerprint or face recognition for payment authentication rather than using contactless payment which pay by just wave or tape the card to contactless device

(Dass, 2017). Apart from that, Shields (n.d.) also said that the usage of contactless card of Malaysia is only 18% as compare in Asia region. The contactless perspective in Malaysia is still fresh as compare to Australia, Singapore and New Zealand as these countries have more mature market of its contactless payment features. In addition, Tay also pointed out that Malaysia is a risk averse society that preferring to follow the innovation trend rather than becomes the lead innovator even the result of pushing the Near-Field Communication in Malaysia shows a slow involvement of popularity. In the other hands, contactless payment is still depending on availability of contactless infrastructure at the trader and number of NFC-enabled mobile devices in the market, this cause's adoption rate of contactless payment in Malaysia is still far from massive utilization (Tan, Ooi, Chong, and Hew, 2014). Amy (2016) also said that the usage of contactless payment is consider low among the consumer due to its security concern of the payment process and consumer are lack of awareness and understanding on the NFC payment process. According to Quah (2017), the fact that contactless payment facilities is still far ubiquitous.

In comparison, adoption rate of NFC mobile payment in Malaysia is still consider low usage on it. (Al-Amri, Maarap, Yahya, Shariff, Samy & Azizan, 2016). There is still lack of infrastructure of high-end NFC payment system in Southeast Asia and lead to low adoption and less affluent as compared to western countries. Perry Ong who represents MasterCard Asia and Pacific Pte Ltd country manager for Malaysia and Brunei, said that there was 650,000 small and medium enterprises (SMEs) in the Malaysia and the SMEs occupy 65 percent of the work party and also produce 36.3 percent of gross domestic product in Malaysia. However, in 2017, most of the SMEs still not equipping with the terminal to accept the contactless payment (MasterCard aims 800,000 POS terminals nationwide by 2020, 2017). Therefore, if compare to other country, Malaysia still far to achieve cashless country by year 2020 if the problems stated above not to be solve. In short, it is crucial for Malaysia to overcome its obstacles of contactless payment services as Malaysia

aims to move forward to cashless platform in futures.

Apart from that, there are some past studies found out that Technology Acceptance Model (TAM) may consist of several limited ability that used to explain adoption of contactless payment. Firstly, the TAM does not take social context into consideration which influence the technology adoption (Dong, 2009). Besides, Mathieson, Peacock and Chin (2001) also pointed out that the TAM said if a person chosen to do so, there is no barriers for them to use a particular system. Due to these drawbacks, therefore, this study is mainly used an integrated model which is The United Theory of Acceptance and Use Technology (UTAUT) that consist of effort expectancy (perceived ease-of-use), performance expectancy (perceived usefulness) and social influence. In other words, the aim of UTAUT is used to better explain users' intention to adopt information system and also behavioural intention to adopt such system. Additionally, both perceived security and compatibility are also incorporated into this study that help to enhance consumer attitude toward the new technology which adopted from Risky Technology Acceptance (RTA) and Diffusion of Innovation (DOI) to better explain variances.

1.3 Research Objectives

This research's objective is to analyse the factors that affect intention to adopt contactless payment in Malaysia. Hence, there are looking to provide more options in this space for understanding the scope of this topic within Malaysia.

1.3.1 General Objectives

Objective of the research is mainly focus on determination of contactless payment adoption in Malaysia on the consumers' perspective.

1.3.2 Specific Objectives

In summary, the specific objectives of this study are divided into two groups which are:

- 1) To determine the factors (perceived ease of use, perceived security, perceived of usefulness, social influence and compatibility) that would affect the intention to adopt contactless payment in Malaysia.
- 2) To analyse whether there will be a significant difference among social demographic factors (race, gender, age marriage status, income level, education level) and intention to adopt contactless payment in Malaysia.

1.4 Research Question

- 1) Is there any significant relationship between the factors and the intention to adopt contactless payment in Malaysia?
- 2) Is there any significant relationship between social demographic factors (race, gender, age marriage status, income level, education level) and intention to adopt contactless payment in Malaysia?

1.5 Hypotheses of the research

- 1) H1₀: There is no significant relationship between perceived ease of use and the intention to adopt contactless payment in Malaysia.
- 2) H2₀: There is no significant relationship between perceived of usefulness and the intention to adopt contactless payment in Malaysia.
- 3) H3₀: There is no significant relationship between security and the intention to adopt contactless payment in Malaysia.
- 4) H4₀: There is no significant relationship between social influence and the intention to adopt contactless payment in Malaysia.
- 5) H5₀: There is no significant relationship between compatibility and the intention to adopt contactless payment in Malaysia.
- 6) H6₀: There is no significant difference between gender group of respondents and the intention to adopt contactless payment in Malaysia.
- 7) H7₀: There is no significant difference between age and the intention to adopt contactless payment in Malaysia.
- 8) H8₀: There is no significant difference between income levels and the intention to adopt contactless payment in Malaysia.
- 9) H9₀: There is no significant difference between education levels and the intention to adopt contactless payment in Malaysia.

1.6 Significance of Study

The growth of technology advancement nowadays has brings one of the pioneers of innovation which is contactless payment in the financial institution or sector. With the growth of FinTech worldwide, there will still be a considerable challenge for Malaysians' willingness to adopt the technology. Based on the Financial

Blueprint 2011-2020, Central Bank of Malaysia that aims to move forward to a new cashless society, with the goal of increasing financial sector efficiency and effectiveness. Hence, the aims of this paper is to have a better understanding of contactless payment adoption in Malaysia and perhaps this study can prosthesis the limitations of past studies that have been conducted regarding on this topic. By discovering deeply on several factors that would affect adoption of contactless payment on consumers' perspective, this study will enrich the gaps due to the past studies regarding to this topic in Malaysia.

Based on past studies, most of the researchers are mainly study on the mobile payment rather than contactless payment that consists of Near-Field Communication and RFID technology. Furthermore, there is still lack of research that focus on the intention to adopt contactless payment in Malaysia region since most of the research found on others developed countries and developing countries as well. Therefore, this paper enables both government and policy makers to have a deeper understanding on the factors drive the intention to adopt contactless payment in the consumers' perspective.

In the other hands, this research will beneficial for both government and policy makers going to implement some new initiatives and see the magnitude of change in a more compressed timeline. Interestingly, Malaysia government has launched several initiatives previously to move a step toward achieving cashless society. However, due to people's general reluctance to change, the uptake of contactless payment in the country is lags quite far behinds in some measurement and the 2020 timeframe seems unlikely. Thus, it becomes sustainable important to have a clear understanding of people willingness to adopt contactless payment to achieve greater economic efficiency.

With just a little over two years remaining, there will still be a huge potential for contactless payment to take off in this country as a new government has successfully won in the past election in this year. By figure out the independent variables that affect the intention to adopt contactless payment in Malaysia, it believe that limitations of aggressive initiative that have been hindered the process can be figured out and reamend by policy makers. Besides, banking industrial also would gain competitive advantage where contactless payment serves as a faster and more convenient alternative to tradition payments method.

1.7 Chapter layout

This research project is include 5 chapters.

Chapter 1: Research overview

This chapter will provide an overview of research background which about the transmission of technology with consumer perspective on contactless payments as an indicator. Besides, the problem statements will also be stated in this chapter as well as the research objective, research question, hypothesis of study, significant of study and some brief of chapter layout with a conclusion.

Chapter 2: Literature review

This chapter will distribute more detail of the research project which consists of literature review from journals and articles that provided by other researchers and the explanation of dependent and independent variables that affecting the adoption of contactless payment. Moreover, this chapter will also include some theoretical model in order for further understanding of the analysis and to prove the consistency of variables. In addition, the development of hypotheses will be formed to identify the relationship between dependent and independent variables. Lastly, a conclusion

will also be made.

Chapter 3: Research methodology

This chapter will provide the research methodology used in the study. The usage of primary data will be selected to commence data collection according to the targeted population in Malaysia. Furthermore, the questionnaires will be distributed to the arbitrary selected respondents with a specific scale of measurement. Lastly, data collection will be done and analysed with the following of conclusion.

Chapter 4: Data Analysis

For this chapter, the data analysis being conducted where the descriptive data will be analysed and the respondent demographic profile will be interpreted. Then, the result for each scale of measurement will be collected in order for analysis purpose, calculation of mean point purpose and the arrangement of ranking purpose. Last but not least, the inferential analyses will also be conducted and one by one result interpretation follow with conclusion.

Chapter 5: Conclusion, Discussion, and Implication

This chapter consider last chapter of this research project where it is including the summaries of statistical analysis result and some discussion in the major findings. The study on implication will also be talk about as it used to let other expert knows the purpose of this research project. Lastly, the limitation of this research and recommendation for future improvement and study will also be listed follow by a conclusion.

1.8 Conclusion

This chapter introduced topics such as background, problem statement, objective and question from the researcher, hypothesis of study, significant of study, chapter layout and the method used to analysis the relationship between intention to adopt contactless payment and each of the variables its variables. The result and details of the literature review about the relationship between intention to adopt the contactless payment and each of the variables will have further discussion in the following chapter.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In literature review, it provided us the overview about the modernization of contactless payment and identify the dependent and independent variables that affect the intention in adopting the contactless payment. In this chapter also discuss the theoretical model, theoretical framework and hypothesis development.

2.1 Contactless payment

According to Collins English dictionary defined “contactless” as technology that can identifies electronic data without the personal’s identification number or signature while “payment” as the act of paying money to someone. Thus, contactless payment is where the payment process do not required the interaction between payment devices with wholesalers’ interfacing reader or another words called “wave & pay” (Chen & Nath, 2008).

In general, the primary usages of contactless payment is for point-of-sale purchases purpose where it could be access by a smart card such as Touch ’n Go, Visa paywave and Master Paypass. But with the transformation of technology, nowadays wherever the mobile phone with the inserted of Radio frequency Identification (RFID) or Near- Field communication (NFC) technology such as Samsung pay or Apple pay also can be set as contactless payment. Moreover, contactless payment can consider as one of the faster, easier and secure method for consumer to make payment nowadays (Square, 2018).

As in Malaysia, usage of contactless payment are still low because of people still customary using tokens or cash as the various exchange transaction. For example, people use money for the exchange of tickets to take transportation services or usually use money to make payment in grocery market. But in China, almost 84% of the population are totally live in a cashless life (Clark, 2017). Therefore, in this digital world, the old version of transaction supposedly been replaced by digital format devices such as contactless payment.

Even though contactless payment is a device that having much benefit to Malaysia's citizen such as more convenience, time saving and secure but the consumer's intention of using this device is still low in Malaysia (Mun, Khalid & Nadarajah, 2017). So that, to achieve Malaysia to become a cashless country, this research set intention to adopt contactless payment as the indicator and to show how this indicator could be influences by other factors.

2.1.1 Radio Frequency Identification (RFID) Technology

According to Want (2004), radio-frequency identification (RFID) refer to an automated data collection technology that transmits data between a RFID tag and a reader via radio waves. This system is made up by RFID transponder, RFID reader and back office data processing equipment (Ozturk, 2016). According to Zhu, Mukhopadhyay and Kurata (2012), the process of collection data through RFID is each RFID tag will consist of various unique identification number and information of the product to transmit to the reader via radio waves. Then the RFID reader will receive the identification number and information of the tag via radio waves. Lastly, the RFID reader will transmit the information to back office data processing equipment. RFID technology not used to perform various tasks such as inventory management, asset tracking and supply chain management, but

today also applied in payment system, which is contactless payment to improve convenient and speed of purchase for consumers.

2.1.2 Near Field Communication (NFC) Technology

Near Field Communication (NFC) technology allow one device passing the data to another device just by putting the two devices close together. In other word, NFC defined as a contactless communication between devices at a close distance (Luomala, 2016). According to Chattha (2014) and Sharma, Gusain, and Kumar (2013), NFC technology enables a device exchange data with another device by using 13.56 MHz of Radio Frequency signals with a bandwidth that not more than 424 Kbits. In other word, NFC is rooted in RFID technology. NFC technology has implemented in several areas such as access control and couponing. However, the most common area that used for NFC technology is NFC-enabled mobile payment, which is contactless payment (Wadii, Boutahar & Ghazi, 2017). NFC technology has powered up contactless payment through radio frequency identification (RFID). Several industries have used this technology to applied contactless payment such as Samsung Pay, Maybank Pay and CIMB Pay. NFC technology has brought a lot of benefits and convenience to the industry and the users (Dutot, 2015).

2.1.3 Related research in Malaysia

Table 2.1.1: Related research in Malaysia

Authors	Theoretical background	Topic & Sampling (in Malaysia)	Adopted determinants
Yeow, Khalid, & Nadarajah (2017)	Technology Acceptance Model (TAM)	Mobile payment services (survey sample: 300)	<ol style="list-style-type: none"> 1. Perceived usefulness 2. Perceived ease-of-use 3. Perceived credibility 4. Social influence
Al-amri, Maarop, Samy, & Azizan (2016)	Technology Acceptance Model (TAM) & Innovation diffusion	NFC Mobile wallet proximity payment (survey sample: 320)	<ol style="list-style-type: none"> 1. Perceived ease-of-use 2. Perceived usefulness 3. Ubiquity 4. Awareness 5. Perceived risk 6. Structural Assurance 7. Security and privacy 8. Trust
Balachandran (2015)	Diffusion of Innovation (DIT)	NFC mobile payment (survey sample: 500)	<ol style="list-style-type: none"> 1. Relative advantage 2. Complexity 3. Compatibility 4. Amount of information 5. Verity of services 6. Perceived financial resources
Tan et al. (2013)	Technology Acceptance Model (TAM)	NFC mobile credit card (survey sample: 220)	<ol style="list-style-type: none"> 1. Perceived usefulness 2. Perceived ease of use 3. Social influence 4. Personal innovativeness in IT 5. Perceived risk 6. Perceived financial cost

The table above mentioned 4 related research papers in Malaysia and the majority range for the survey sample is around 300 to 500. The related research on contactless payment in Malaysia is consider important due to it can be used as periodical of the independent variables and model which might fit the intention to adopt contactless payment. For instance, the majority of the research are using Technology Acceptance Model (TAM) and Diffusion of Innovation Model (DOI) for theoretical study. Besides, those research papers also is studying the direct effects on the intention in

adopting contactless payment.

In addition, those research papers above can assist to deliver a better understanding about how the independent variables can bring influence to consumer's intention to adopt contactless payment such as consumer's intention may be influence by social or their lifestyle. However, the most used independent variables that related to intention to adopt contactless payment is including the perceived ease-of-use and perceived usefulness. The reason is these two independent variables are commonly tested by the majority authors. Therefore, it can be considers most significant factors that bring influence on consumer's intention to adopt contactless payment.

2.1.4 Intention to Adopt Contactless Payment

According to Jenkins and Ophoff (2016), intention to adopt is referring to individuals' acceptance of somethings based on his or her willingness on the particular object. Besides, intention to adopt also indicates based on that consumers' understanding and their behaviour of use of new technologies.

In addition, research of Abrahão, Moriguchi and Andrade (2016) pointed out that consumer behaviour would stimulate an individual to purchase something and hence it will affect the intention to adopt through the decision-making process. Commonly, reaction of individuals in adoption of some new technology like NFC contactless payment might be affect by several factors such as perceived ease of use, perceived usefulness, perceived security, social influence, and compatibility.

Previously, many studies have been conducted by using "Intention" to predict the adoption of some technology services over the world. For

instance, Abrahão et al., (2016) have conducted a research on intention of adoption of mobile payment among Brazilian and they believed that they need to meet some obstacles like technological challenges and restructure the market over time to assess the intention of the consumers in the process of acceptance such a service.

2.1.5 Perceived Ease of Use

Perceived ease of use defined as the degree to which the individual believe that use of the contactless payment to be relatively free from physical or mental effort. According to Lin (2011), perceived ease of use can be define as the grade of easy to use and to understand and operate by the individual towards the contactless payment method. Based on Moore and Benbasat (1991) and Davis (1989) the perceived ease of use can be uses to describe the level of intention of individuals toward the use of the new innovation technologies. Following by the research from Radner and Rothschild (1975), definition of ‘ease’ was the level of freedom from difficulty or great effort. Which also brings the meaning of the level of difficulty to manage. The difficult of the procedure of contactless payment and ambiguous to manage it will lead to reduce the perceived ease of use.

According to Abadzhmarinova (2014), the perceived ease of use has the positive relationship to intention of NFC mobile payment. The researcher said that everything was equal and fair, if the application is easier to use than another, then that is easier to accept and welcome by users. The same finding found in Kukulska-Hulme (2007), the researcher believes that if there was the activity or camping regarding mobile payment learning will leads to increase the usability issues. As the users are more understand the procedure of contactless payment, the easier to operate, and the adoption will be higher.

This finding was supported by the proven of Johnson, Kiser, Washington and Torre (2018). The result stated that perceived ease of use has a direct positive relationship with the intention to adoption of mobile payment service.

In the other viewpoints, Pham and Ho (2015) found out the perceived ease of use has no significant relationship with intention to adopt NFC-based Mobile payments. The researcher stated that consumer of NFC-based mobile payment may not clearly express is that a difficult of understanding for the product. Which mean that to understanding an electronic payment product for them is not a problem. The similar result was shown in another studies which examined by Shatskikh (2013), Koenig-Lewis, Marquet, Palmer and Zhao (2015), Aw, Khalil, Emad and Janejira (2009), Tan, Ooi, Leong and Lin (2014), they using the Unified Theory of Acceptance (UTAM), Technology Acceptance Model (TAM) and Use of Technology (UOT) in their research to analyse the M-payment adaption. One of the independents variable they used was perceived ease of use. Finally they got perceived ease of use had no significant effect on adoption on M-payment.

2.1.6 Perceived Usefulness

According to Wang (2008), she defined perceived of usefulness as the degree to which a person believes that using a particular system would enhance his or her job performance. Which mean how an individual use a particular system to complete and improve the job performance. System will help to improve and enhance individual effectiveness and efficiency on completing the job. The individual will tend to use the system if they believe that the system will assist them in the job.

Besides that, Leong, Ooi, Tan and Hew (2013) also found that there is significant influence between the perceived of usefulness and the intention of use on various information system adoption. In other words, individual's intention on adoption on the new information system is depend on the usefulness of the information system to improve the daily activities. The information system such as mobile entertainment, mobile credit card and mobile payment can improve the daily activities because individual can make payment by just a simply wave the mobile device at the touch point, so they can save the time by avoiding queuing.

Paul, Oliver and Bernd (2009) stated that systems can make user's life to be more effectives and efficient by offering applications that are useful to user. A useful system is that system that can help user to save time and make the daily activities goes smooth. It will also be widely available and can be use and apply to various type of payment application such as paying for digital content, Point of Sale (POS) payments, virtual POS, vending machines, topping up pre-paid mobile accounts, or person-to-person payments. The widely available and the usefulness of the system will increase the intention of user to adoption the new information system.

According to Davis (1989) previous research suggested determinant that are important among the many variables that may influence system use. The intention of adopting the system application are depended on the function of the system which make them believe that the application will help them better in performing their job. He referred this variable as the perceived of usefulness. The user of the application believes that there is an existence of positive use-performance relationship if the system presented in a high perceived usefulness. The perceived of usefulness of application are important in influencing the user to adopt the new system or services.

2.1.7 Perceived Security

Perceived security may define as the standard of the security that buyers feel when they are participated in activities of e-commerce (Yenisey, Ozok & Salvendy, 2007). According to Salisbury, Pearson, Pearson, and Miller (2001), perceived security refers to buyers' belief on sellers' willingness or ability to keep their monetary information confidential from the breach of security. Perceived security is one of the important determinants in adoption of contactless payment.

According to Salimon, Yusoff and Mokhtar (2015), perceived security always seen as a threat in e-commerce that will potentially cause loss, fraud and abuse of data and devastation of information during transmission and storage. Consumer always concern about their privacy or information will be fraud when using new technology and innovation. Vejačka (2015) also stated that if a customer decides to adopt contactless payment, they might not only seek for its usefulness, but also its security. In other word, customers might afraid any possible security issues arise from contactless payment. According to Al-Amri et al. (2016), customers only will adopt contactless payment when it is safe and secure. Customers are very concern in their privacy and monetary information being vialoted. Customers will loss their confidence in contactless payment when they feel unsecure and unsafe. This statement also approved by Dutot (2015), decisions of customers to adopt contactless payment will influenced by perceived security since they are afraid their monetary information confidential used by third party for fraudulent purpose.

In the study of Luomala (2016), it stated that perceived security has a significant relationship with the intention to adopt contactless payment. Contactless payment is a payment method that without any PIN

authorization, therefore it may potentially cause monetary losses if the contactless payment instrument has been stole. Besides, information confidential may intercept by hackers when the data is transmitted over contactless network. Other than that, some contactless payment method such as Apple pay and Samsung Pay, customers need to insert their bankcard personal information into the system for payment purpose. This has involved third party to take care the payment transaction between users, bank and reseller. In this case, consumer may question the trustworthiness of the third party such as Apple or Samsung Company. The third party may not trustworthy than traditional banks.

According to Pham et al. (2015), perceived security was recognized as a main factor that affect the intention of customers to adopting an innovation general and e-commerce. A customer who perceived contactless payment as a risky and unsecure payment method are not confidence and willing to adopt contactless payment. For traditional use of credit card, consumer has to pass their credit card to the seller for payment transaction. This may cause the consumer afraid that their credit card will be fraud during payment transaction since the consumer has leaving their card and lose the sight on it. However, Wang (2008) found that even though contactless credit card has enhanced the security by enable users to make payment without leave their contactless card from hand and sight, but there are still have some of the customers deem that using contactless card to make payment is unsecure. From the study of Cabanillas, Luna, and Ríos (2017) that highlighted that perceived security are major factor that will influence the intention to adopting electronic payment systems, especially for new electronic payment system. This is because the security for new electronic payment system may still not stable yet. Therefore, a better security mechanism for new electronic payment systems is important to enhance consumer's acceptance of

contactless payment (Eyuboglu & Sevim, 2017).

2.1.8 Social Influence

Social influence in this study refer to new technology adoption based on consumers' perspective that may affect by people around. The underlying assumption is important for this research because people are concerned about the uncertainty associated with a fairly new product which is contactless payment in this study. Therefore, people tend to be more cautious especially for the early adopters and they are likely to seek opinions in order to reduce any uncertainty exist of a new technology.

Based on the research of Karahanna, Straub and Chervany (1999), social influence can be classified into three elements which are subjective norm, image and voluntariness. Social influence also can be said to have a direct effect on a behavioural intention to use a new system that make individual to have certain perceptions on the new technology (Amoroso & Watanabe, 2012). In the new era of technology, Teo and Pok (2003) also figured out individuals nowadays willing to adopt new technology in order to increase their image and social status respectively. This is truly undeniable that individuals nowadays especially Y generation are easily get influenced by the people surround them and concern about their social image in daily routine.

According to Tan et al. (2014), people are easily vulnerable to environmental affection especially for the young generation and they believe that adopting certain technologies assist them to enrich their social status and reduce the uncertainty associated with the new technology. Therefore, Tan et al. (2014) believed there will be a positive relationship

among social influence and intention to adopt new technology related to this research topic of near field communication technology. Additionally, a positive association has been carried out between social influence and intention to adopt a new system in the previous studies of Venkatesh and Morris (2000). This study is mainly focus on social influence and the adoption of mobile credit card and it shows that there is a direct effect on the intention to use a new system due to the trendy nature of Near Field Communications (NFC). This statement also supported by Gupta, Dasgupta and Gupta (2008) which also agree that there will be a significant relationship where social influence would make people think that it is important for them to implement the behaviour in question, however, there will be no relationship between males and females.

Conversely, there are also some of the past studies also pointed out that there is no relationship between social influence and the intention to adopt new technology. (Taylor & Todd., 1995; Venkatesh, Morris, Davis & Davis, 2003; Cao, 2016). According to Cao (2016), social influence has been taken out from the research model since social influence implied a weak impact on the intention to adopt FinTech which is Plastic Card in Finland at the infancy stage. Meanwhile, social influence has its own research value and need to conduct for future research since it believe that once the potential adopters form, they might be very high potential users and FinTech can be widely adopted.

2.1.9 Compatibility

According to Rogers (1983), compatibility can be defined as which a compatible innovation is reliable on the prospective of consumer's existing behaviour and value, present lifestyle and consumer needs. However, in the

study of Moore et al. (1991) has further explain the definition of Rogers on compatibility on the inclusion of consumer's needs. Where Moore and Benbasat explain that if the innovation device does not reflect advantages to the consumer's needs, then there is no compatible in the innovation technology. Therefore, compatibility can be refer to the intention of consumer in adopting an innovation is depending on the advantages that they can gain from the technology. For instance, consumers may believe that contactless payment is a compatible innovation if they get benefits in using contactless payment to perform in their daily life (Oliveira, Baptista, Campos & Thomas, 2016).

Furthermore, compatibility can also refer to the behavioural or pattern that an individual already had and it could intensely affect the decision of a person intention in adopting a new technology device (Lu, Yang, Patrick & Cao, 2011). For example, if the consumer believes that using contactless payment device is more secure compare to carrying lot of cash on hands, so that, he or she will more likely to use contactless payment device (Cobanoglu, Yang, Shatskikh & Agarwal,2015). Conversely, if the person is customary relies on cash payment, he or she will refuse in using contactless payment and this technology is not compatible to the person. Therefore, compatibility is consider as significant factor in identify the consumer adoption rate supported by Thanh-Thao and Jonathan (2015) study.

However, according to Schierz, Schilke and Wirtz (2010) believe that compatibility is directly influence the intention of a consumer in adopting a technology. To conclude on this independent variable, it could be an effective variable due to every consumers have their own definition on everything such like some people prefer in cash payment, but some prefer contactless payment. Those is depending on the consumer's habit and belief

and how the consumer defines the technology in his or her lifestyle. So, to make an innovation technology can be successful in the market, compatibility is one of the important factors that can be used for the measurement.

2.2 Review of related Theoretical Models

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

According to Thomas, Singh and Gaffar (2013), the purpose United Theory of Acceptance and Use of Technology (UTAUT) model is used to explain the technology acceptance. This model is formed by Venkatesh et al. (2003) to explore the determinants that affecting the intention of consumer adopting new technology and innovation. According to Venkatesh et al. (2003), the UTAUT is the combination of Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA), Combinational Model of TAM and TPB (C-TAM-TPB), Motivational Model (MM), Model of PC Utilization (MPCU), Innovation Diffusion Theory, and Social Cognitive Theory (SCT). There are four main variables and four moderating variables consists in the UTAUT model. The main four variables are effort expectancy, performance expectancy, facilitating conditions and social influence while the four moderating variables are gender, age, experience and voluntariness of use. Performance expectancy refer to an individuals deem that they will gains in performance from the adoption of technology, which may also defined as perceived usefulness.

Besides, Thomas et al. (2013) defined effort expectancy as the ease of use of a technology and social influences refer to an individual intention to adoption of technology may influences by social such as friends or family. Lastly, facilitating conditions defined as perceived extent to which the technical infrastructure required for the support of the technologies exist (Thomas et al., 2013).

According to Bhatiasevi (2015), TAM is a popular theory that have been used widely and frequently to study the determinants of intention to adopting new technology and innovation. However, UTAUT has started drawn the other researches' attention to applied in various studies of technology acceptance. Nysveen and Pedersen (2014) also concluded that UTAUT model is a very useful model to apply in the study of technology acceptance and helps to understand what the drivers of acceptance is. In the study of Lu, Yao and Yu (2005), it stated that although perceived ease of use and perceived usefulness is an important variable that will affect the intention of adoption of new technology and innovation, but social influence also is a main factor.

In this study, social influence had been chosen from the UTAUT model as an independent variable since social influence can grab the attention of user intention to adopt new technology and innovation. Other than that, performance expectancy and effort expectancy also are independent variables in this study which are perceived usefulness and perceived ease of use.

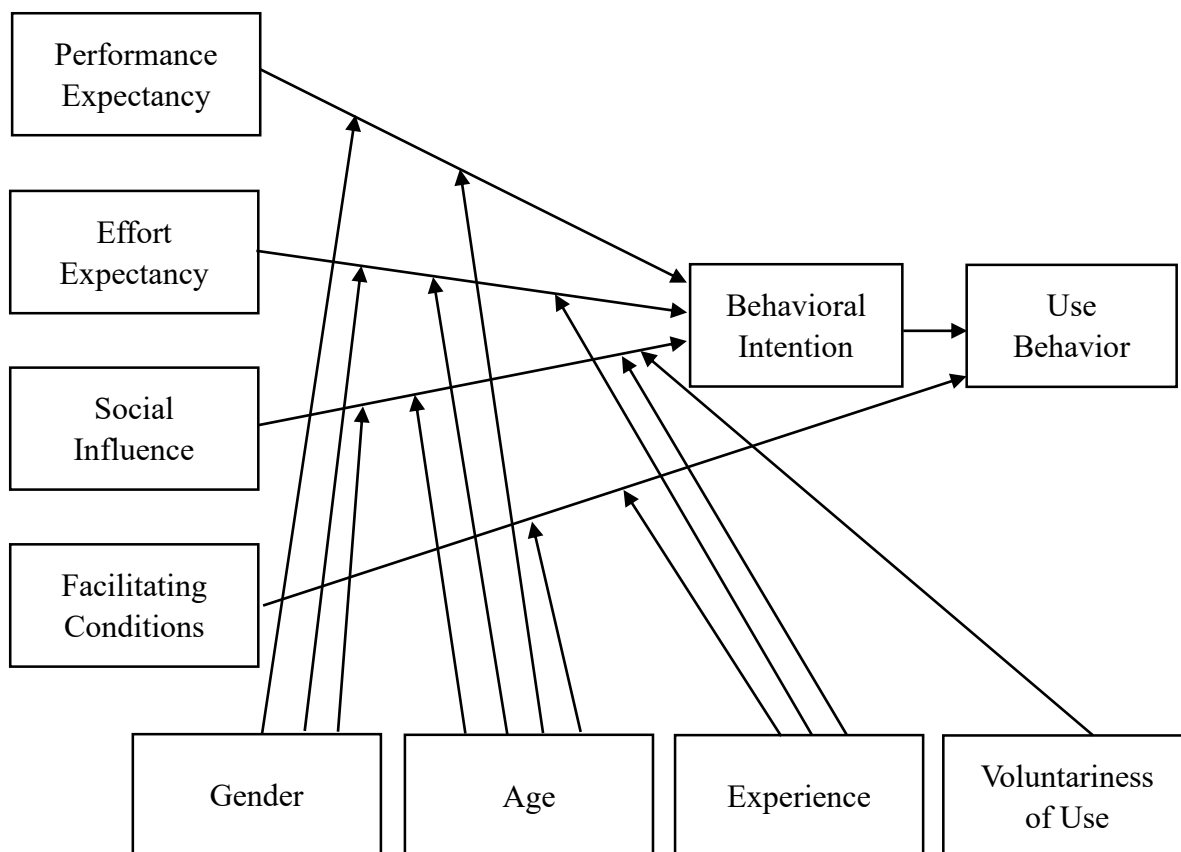


Figure 2.1: The United Theory of Acceptance and Use of Technology

Sources from: Venkatesh, V., Moris, M. G., Davis, G. B., & Davis, F. D. (2003).

User Acceptance of Information Technology: Towards A Unified View. *MIS Quarterly*, 27(3), 425-478.

2.2.2 Diffusion of innovation (DOI)

In this research, the theoretical backgrounds is innovation of new technology and the characteristics of contactless payments. This study is to identify the adoptable and understanding the factors of accept or reject the adoption of NFC-based contactless payment.

Diffusion of Innovation (DOI) theory was chosen by us to examine the contactless payment adoption in this research. DOI is a very popular theoretical lens and has been often used to examine the factors of adoption

of innovation technology. Based on the Mallat, Rossi, Tuunainen and Öörni (2009), and Arvidsson (2014) they used DOI to examine the adoption of smart card and mobile payment service. The advantage of using DOI theory is it provides a structure of the various types of consumer disregarding the status of economic and allows the investigation of the factor which will affect the decision for the adoption of innovation technology.

DOI theory stated that the personal innovativeness is the key point of will the individuals to adopt a new innovation technology. According to Rogers (1995) five categories of adopters which is innovators, early adopters, early majority, late majority, and laggards. For the Innovators, they are easy to adopt the new things. This type of individual love to explore and also are the risk taker. Early adopters are likeness to innovators which adopt new thing in speed way. Just they will take the consideration about the factor. Following are early majority and late majority. Compare to innovators, they are the majority of the individuals. The early majority more focus on the real productivity and benefits after the innovation running some times. While the late majority is almost the same. But they usually need a hand and support before they are willing to commit. The last category, laggards has the slowest adoption speed. They are hard to change and only will change when they have to change (Pearce, 2013).

Besides that, the DOI model propose that there was five characteristics will lead to easy adoption for individuals. The five characteristics are relative advantage, compatibility, complexity, observability, and trialability (Rogers, 1995). Since in this research, contactless payment was just early stage in Malaysia. By using this model, this study is trying to figure out the relative advantage of the contactless payment over traditional payment method and compatibility of contactless payment with public lifestyle and need.

This research is to examine on the perceived usefulness, perceived ease of use, perceived security, social influence and compatibility as the independents variables for intention to adopt the contactless payment. The research model that been selected is to propose to address this issue. The next sub-topic will discuss the hypothesize variables in this study and the relationship of them with the adoption of contactless payment.

2.2.3 Risky Technology Adoption Models (RTA)

When it comes to research about adoption on a new technology, security is the main concerned by the user. Security issues is the most discussed factor. According to Gupta and Xu (2010), the risk and safety awareness of technology will affect the security concern and the intention to adopt and it's included in a research model. This also mean that security concern will directly the intention of the consumer in adopting.

Cao (2016) stated that, there are two significant roles that will affect the technology adoption which are risk and control. There are some recommendations for those vendors and services provider when they launched a new technology based services or products. They should enhance the control issue in advertisement and emphasize on user instruction and guidelines to improve the rate of adoption.

Information security concerns can be defined confidence of buyer's when completing transmission and storage on seller's inability and unwillingness to protect and safeguard the buyer monetary information from security breaches (Pavlou, Liang, and Xue, 2006). Which also mean that those buyers cannot clearly predict whether their information are safeguarded appropriately from security breaches. They also worry on they may suffer

on financial problems in future if their information did not safeguarded by the seller. However, Pavlou et al. (2006) also clarify that buyers must have confident in seller in safeguard their information during transmission and storage with authentication, encryption, and non-repudiation.

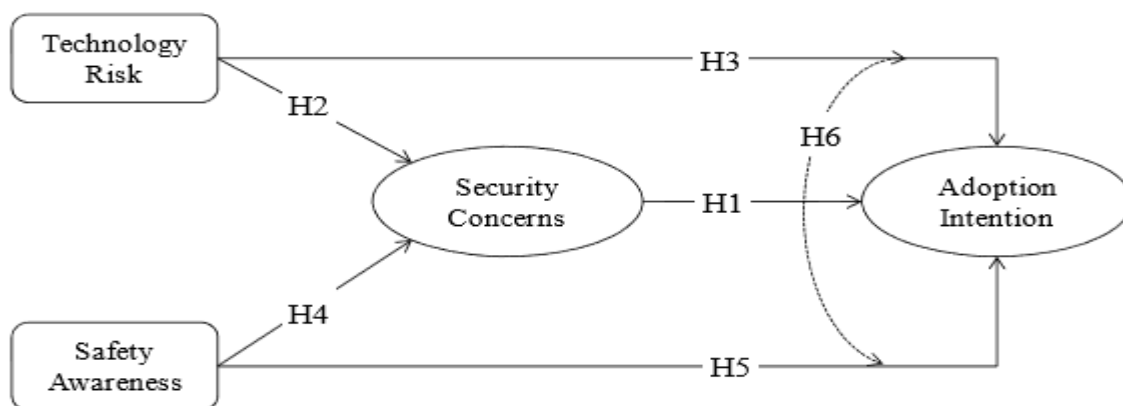


Figure 2.2: Risky Technology Adoption Models (RTA)

Source from: Gupta, S. & Xu, H. (2010). Examining the Relative Influence of Risk and Control on Intention to Adopt Risky Technologies. *Journal of Technology Management and Innovation* 2010, Volume 5, Issue 4

2.3 Proposed Theoretical/Conceptual Framework

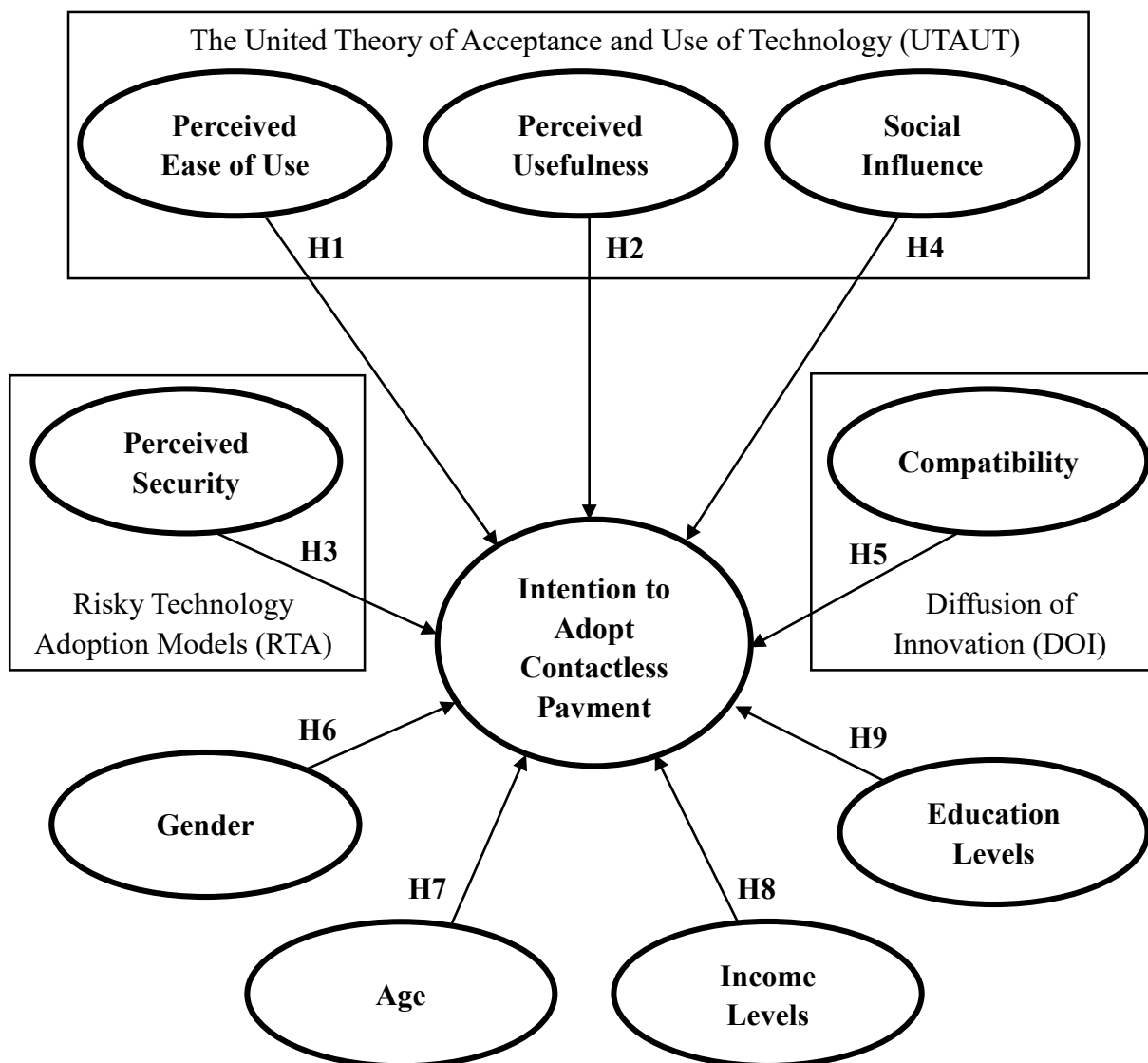


Figure 2.3: Proposed Model of the Factors of Intention to Adopt Contactless Payment

The figure represents the proposed model of the factors of individual's intention to adopt the contactless payment. According to past studies, the examination of researches run through showed there is the significant relationship between perceived ease of use, perceived usefulness, perceived security, social influence and compatibility towards the intention to adoption of contactless payment. So, the theoretical framework is to study the significant relationship among these all independent variables towards the dependent variables. Besides that, this study also

examine the significant difference between demographic factors (gender, age, income levels and education levels) towards dependent variable.

2.4 Hypothesis Development

2.4.1 Perceived Ease of Use

H₁₀: There is no significant relationship between perceived ease of use and the intention to adopt contactless payment.

H₁₁: There is significant relationship between perceived ease of use and the intention to adopt contactless payment.

The hypothesis testing was running to help us examine the relationship between perceived ease of use and the adoption of contactless payment. According to the research of Abadzhamarinova (2014), he found out there was a positive relationship between perceived ease of use and the adoption of contactless payment. The same result getting by Johnson et al. (2018) also verified that the perceived ease of use has a positive significant relationship with the adoption of contactless payment.

2.4.2 Perceived Usefulness

H₂₀: There is no significant relationship between perceived usefulness and the intention to adopt contactless payment.

H₂₁: There is significant relationship between perceived usefulness and the

intention to adopt contactless payment.

This hypothesis is conducting to test the significant relationship between perceived usefulness and the intention to adopt contactless payment. According to Leong et al. (2013), there is a positive significant relationship between perceived usefulness and the intention to adopt contactless payment. This also mean that the perceived usefulness is one of the factor that affecting the intention of user to adopt contactless payment. This statement also being made by Paul et al. (2009). However, the study done by Wang (2008) showed that the perceived of usefulness is not significant with the intention to adopt contactless payment. Which mean the perceived of usefulness do not affect the intention of the users.

2.4.3 Perceived Security

H3₀: There is no significant relationship between perceived security and the intention to adopt contactless payment.

H3₁: There is significant relationship between perceived security and the intention to adopt contactless payment.

This hypothesis testing is to test the significant relationship between perceived security and the intention to adopt contactless payment. According to Vejacka (2015), there is a positive significant relationship between perceived security and intention to adopting technology. Which means perceived security is a factors that will influenced the intention to adopting contactless payment. This statement also approved by Cabanillas et al. (2017) and Luna, Montoro-Ríos, Liebana-Cabanillas and Luna, (2017), both studies conclude that perceived security is an issue that will influence the intention to adopting technology. Besides, Al-Amri et al. (2016) also

prove that perceived security has a positive effect and significant relationship on customer intention to adopt technology. However, the result from the study of Moroni, Talamo and Dimitri (2015) is different, it found that there is insignificant relationship between perceived security and the intention to adopt technology. While this result is supported by Aydin and Burnaz (2016) and Tan et al. (2014).

2.4.4 Social Influence

H4₀: There is no significant relationship between social influence and the intention to adopt contactless payment.

H4₁: There is significant relationship between social influence and the intention to adopt contactless payment.

This hypothesis testing aims to test the significant relationship between social influence and the intention to adopt contactless payment. Based on the research of Dutot (2015), social influence tends to have a significant relationship with the Near Field Communication (NFC) adoption. Based on the research in France, social influence is one of the important factor that drive the usage of Near Field Communication technology in the country. Besides, Gupta et al. (2008) findings also support that a positive relationship between social influence and intention to adopt the system really does exist in the context. In short, social influence was suggested to get into further studies of this research.

2.4.5 Compatibility

H5₀: There is no significant relationship between compatibility and the intention to adopt contactless payment.

H5₁: There is significant relationship between compatibility and the intention to adopt contactless payment.

This hypothesis testing is used to test the significant relationship between compatibility and the intention to adopt contactless payment. According to the study of Chen et al. (2008), compatibility is highly propensity variable to the intention to adopt the e-payment technology. From the studies of Thanh-Thao et al. (2015) also commented that consumer's compatibility is positively affect the intention to adopt NFC technology. Besides, the studies of Cobanoglu et al. (2015) indicated that compatibility also having a positive relationship on the consumer's intention to adopt e-payment technology. Therefore, most of the past study shown compatibility is positively related to the intention of consumers on the adoption of e-payment technology like contactless payment.

2.4.6 Gender

H6₀: There is no significant difference between gender of the respondents and intention to adopt contactless payment.

H6₁: There is significant difference between gender of the respondents and intention to adopt contactless payment.

This hypothesis testing is used to identify the relationship between the intention of consumer in adopting contactless payment and gender of the respondents. The gender can be differentiating as male and female. According to Tan et al. (2014), there is no significant different between gender and intention of adoption on a new technology. Besides, the researchers also claimed that the intention to adopt a new technology on both male and female is following the similarly pattern.

2.4.7 Age

H7₀: There is no significant difference between age of the respondents and intention to adopt contactless payment.

H7₁: There is significant difference between age of the respondents and intention to adopt contactless payment.

This hypothesis testing is used to examine the relationship between the intentions of consumer in adopting contactless payment and age of the respondents. According to Leong et al. (2014), there is significant relationship between the intentions of consumer in adopting contactless payment and age of the respondents. The most active user is between the ages of 21-25 years old. This statement also supported by Nysveen et al. (2005), also stated that the age of the respondents will directly influence the intentions of consumer in adopting contactless payment and they show a significant relationship. The higher the age of user the lesser the intentions of consumer in adopting contactless payment. However, Dabholkar, Bobbit and Lee (2003) stated there is no significant relationship between the intentions of consumer in adopting contactless payment and age of the respondents. Which also mean that the age of consumer will not affect the intention of adoption.

2.4.8 Income Levels

H8₀: There is no significant difference between income levels of the respondents and intention to adopt contactless payment.

H8₁: There is significant difference between income levels of the respondents and intention to adopt contactless payment.

This hypothesis testing is used to investigate the relationship between the intentions of consumer in adopting contactless payment and income of the respondents. According to Dahlberg and Öörni (2007), there is a significant relationship between the intentions of consumer in adopting contactless payment and income of the respondents. Which means the increase in the income of the consumer will increase the intentions of consumer in adopting contactless payment.

2.4.9 Education Levels

H9₀: There is no significant difference between education levels of the respondents and intention to adopt contactless payment.

H9₁: There is significant difference between education levels of the respondents and intention to adopt contactless payment.

The aim of hypothesis testing is to test the significant relationship between education level and the intention to adopt contactless payment for the respondents. In the research of Daud, Kassim, Said and Noor (2011), the result was shown education level has significant difference with the intention to adopt. It's stated the high education respondents are likely the first segment to adopt the new mobile banking service. Same result was collected from Amin, Hamid, Lada and Anis (2008). This research shows the higher the education of respondents, the higher the intention to adopt the new technology such as financial technology.

2.5 Conclusion

In the chapter 2, this study definite 'contactless payment' and clarify the technology used by contactless payment. In this study also found that the usage of contactless payment was still low at Malaysia although this technology bring convenience to citizen. Furthermore, the discussion of the dependent and independent variables is included in this chapter. This is to help reader easier to understanding the relationship between the dependents and independent variables of this research. Moreover, this chapter also conduct of theoretical model, hypothesis which are trying to figure out the significant relationship between the independents variables and dependent variable. In the following chapter 3, the research is going to discuss the Methodology. The step of planning to undergo to collect the survey data will be talk about in chapter 3.

CHAPTER 3: METHEDODOLOGY

3.0 Introduction

In this chapter, there is an overview of methodology that used in this research study which is including research design, data collection method, sampling design, research instrument, contracts measurement, data processing and data analysis. The collection of 500 questionnaire been conducted from arbitrarily selected respondents. The ways that used to approach those respondents is through face-to-face and online. However, in this chapter, there will also have further discuss on how this research was conducted.

3.1 Research Design

The aim for research is mainly consider about the individual consumer's perception on contactless payment and the factors that affecting their intention to adopt on this payment method. In order to complete this research, the descriptive research approach had been used as the research design due to it could provide an intermediate to study the awareness of consumer on contactless payment in this modern era. However, according to Ethridge (2004) explained that descriptive research approach is a statement that used to present an uncontrollable variable in an analytical research.

On the other hands, according to Patel (2009) defined that quantitative methods is usually used to observe the dependent and independent variable. Therefore, in order to accurately collecting the data, this study also used quantitative method for the

research of questionnaire part where firstly will gather those data in a statistical form which will put in rating scale. So, the respondents will just directly rate their response in the questionnaire.

However, pilot test had been done before the actual survey being distribute. The sampling method used for the pilot test is the convenient sampling. According to Paul (2008), convenient sampling is a type of nonprobability sampling where most of the people are being sampled up due to they are convenient to the researcher. Which in other word mean that the respondent are selected due to their willingness, availability and accessibility (Paul, 2008). The method being use because it simplify the sample, helpful for pilot studies and hypothesis generation, the data can be collect in a shorter duration and it is the cheapest sampling method. Thus, for those who has higher willingness, availability and accessibility to allow gains on the basis data and trends will be the respondent for the pilot test.

In addition, the targeted respondents are usually Malaysians or residents that live in Malaysia. The respondents may also need to provide their demographic information which set in the first part of questionnaire. But, the most important demographic information is the respondents need to state either they are existing contactless payment user or not. The reason is to clearly identify the consumer's perception on contactless payment and what are the factors that affecting their intention in adopting the contactless payment.

3.2 Data Collection Method

Quantitative method being used for the data collection purpose for research. The questionnaire that distributed to respondents is including softcopy (online) and hardcopy (face-to-face invitation). Therefore, there are total of 500 set

questionnaire spread to targeted respondents from 12th June 2018 to 3rd July 2018 through different states in Malaysia.

From the 500 set of questionnaire, 400 set is distributed by face-to-face invitation and the others is collect from online social media (E.g.: Facebook). However, there is only 350 set of hardcopy questionnaire being collected back and 69 set of softcopy questionnaire being collected from online social media (E.g.: Facebook) where achieve a total of 419 set completed questionnaire.

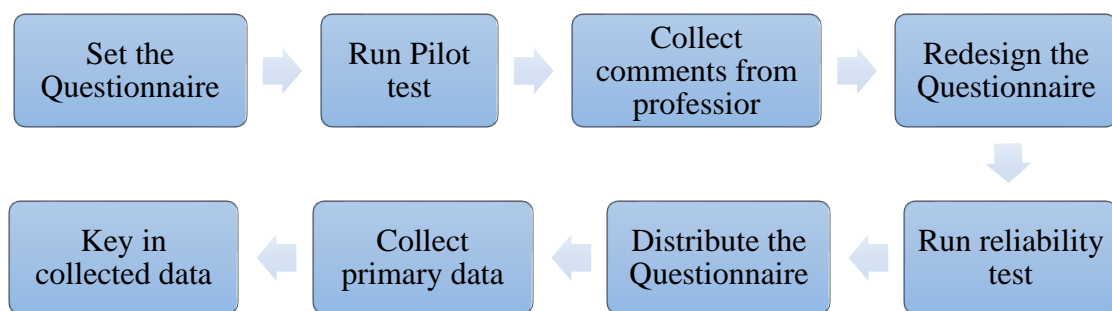


Figure 3.1: Data Collection Flow Chart

3.2.1 Primary Data

As this research is study about the consumer perspective of using contactless payment in Malaysia, so that, primary data is more suitable for collecting information from consumer to identify their satisfaction level in using the contactless payment. However, the cost of distributing questionnaire will be easily cut down by using the advance technology which called internet. Besides, it also help us in monitoring the data collection process.

On the other hands, this study had sent out a total of 500 set questionnaire through face-to-face invitation and internet. A total of 400 hardcopies questionnaire were distributed to the arbitrary selected respondents through face-to-face but according to the targeted age with different location. There

is about 350 set hardcopies questionnaire returned where achieve a responses rate of 87.5%. However, there is about 49 set of questionnaire been rejected and the reason is those consumer not the user of contactless payment and some of them even do not have enough knowledge about this payment method.

Conversely, the softcopies questionnaire which sent through social media (Facebook) were received a return of 87 set. However, there are 19 set questionnaire was rejected by respondents due to they are not user of contactless payment while 68 set was accepted as they are user of contactless payment. In this 87 set of softcopies questionnaire, there is no missing data due to the online respondents need to answer all the compulsory question and only the completed answer can be submitted. As a result, there is a balance of 419 set questionnaire will be used for further research study.

3.3 Sampling Design

Sampling design include of targeted population, sampling frames and sampling location, sampling elements, sampling technique, and sampling size.

3.3.1 Target population

The targeted population are based on individual customer perspective by using contactless payment who currently living in Malaysia regardless of the states. According to the source of Malaysia's official statistics in 2018, there are total 32.4 million population in first quarter 2018.

3.3.2 Sampling Frames and Sampling Location

The study sampling frame would be at least 18 years for the studies of the population in Malaysia. According to Indexmundi (2018), the population for the 0-14 years old are 27.83%, for the 15- 64 years are 66.07% and for the 65 years and over are 6.1%. Bumiputera had the highest percentage of record which are 61.7%. And followed by Chinese 20.8%, Indian 6.2%, and other 0.9%. The main research's research sampling location would be the resident of Penang, Perak and Melaka. The survey are spread 200 sheet to Penang, 100 sheet to Melaka and 100 sheet to Perak. Most of the survey form are spread to Penang because Penang have many tourist spot so there will have higher contactless payment availability. Melaka also have tourist spot but Melaka are small compare to Penang. Perak was chosen because Utar are located at Kampar Perak which have more professional user.

3.3.3 Sampling Elements

In the study, there are certain criteria that need to be fulfilled. For instance,

- Questionnaire will be distribute by researcher through internet and physical location.
- Only respondent that adopt the contactless payment will be given the questionnaire.
- Respondents must have an account and device from any commercial banks that offering respondent to use contactless payment in Malaysia.

3.3.4 Sampling technique

Some amendments and adjustments had been done on the questionnaire after the pilot test. The method used for the distribution of the actual survey is convenience sampling. This sampling technique also known as a non-probability sampling. The respondent of questionnaire are selected by researcher due to the convenient of their accessibility and proximity toward researcher. Besides that, convenience sampling are selected because it can help and make researcher have an easier way to recruit the respondents. This is the sampling technique that mostly chosen and commonly used by the researchers. Researcher prefer to use this technique because the availability of ready respondent are high, and also the sampling technique are cheaper, used shorter period and easy to use (Explorable.com, 2009). The researcher distribute the questionnaire based on their conveniences such as the location to distribute the questionnaire, amount of questionnaire distributed per location, and also the chosen respondents. Researcher will only choose the respondent that met their requirement and also convenience to them. This method will require a shorter period for the researcher to meet the survey checkpoint.

3.3.5 Sampling size

The number of observation in a sample collected is sample size. Sample size table were used for calculation for the present result of the sets of survey.

For this research, 500 respondents have been targeted for the survey. But only 419 surveys being collected there are 69 from softcopy and 350 from the hardcopy. For the calculation of the sample size, the sample of a sufficient number has to generate a 95% confidence interval that predicts

the proportion of the respondent that are not surveyed repeatedly within \pm 1.5%. As referred to the sample size table below, the respondents are cut down to a sample size of 377 out of all the respondents.

Table 3.3.5: Sample size table

Population Size	Required Sample Size [†]							
	Confidence = 95%				Confidence = 99%			
	Margin of Error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579

Source from: Sample size table, (2006). The Research Advisors. Retrieved from <https://www.research-advisors.com/tools/SampleSize.htm>

3.4 Research Instruments

3.4.1 Survey Design

The questionnaire for the research contains eight pages including one cover page which introduces the title of the research and briefly explain the structure of the questionnaire in order to guide the respondents to be able to answer this research questionnaire based on individual perspective. This questionnaire comprise of two parts, Section A and Section B. In section A, multiple choice question technique is used to collect the demographic information of the respondents. Meanwhile, 5-point Likert scale is adapted to investigate the factors affecting intention to adopt contactless payment. In the Likert scale of this questionnaire, “5 = Strongly Agree”, “4 = Agree”,

“3 = Neutral”, “2 = Disagree”, “1 = Strongly Disagree”. The origin of the questionnaire is shown as below.

Table 3.4.1: Origin of questionnaire

Items	Content	Original content	Adapted from
Perceived Ease of Use			
PEU1	The use of contactless payment method is clear and understandable.	The use of mobile payment services is clear and understandable.	Agarwal & Prasad (1997)
PEU2	I believe that contactless payment services would be easy to use.	I believe that mobile payment services would be easy to use.	Agarwal & Prasad (1997)
PEU3	Learning to use contactless payment services would be easy for me.	Learning to use mobile payment services would be easy for me.	Agarwal & Prasad (1997)
PEU4	Using contactless payment services isn't mentally challenging.	Using mobile payment services isn't mentally challenging.	Agarwal & Prasad (1997)
PEU5	Using contactless payment services is straight forward.	Using mobile payment services is straight forward.	Agarwal & Prasad (1997)
PEU6	Contactless payment technology is easy to learn.	Mobile payment technology is easy to learn.	Koenig-Lewis et al. (2015)
PEU7	My interaction with contactless payment procedure is generally clear and understandable.	My interaction with mobile payment procedure is generally clear and understandable.	Koenig-Lewis et al. (2015)
PEU8	I generally find contactless payment services to be complicated to use.	I generally find mobile payment services to be complicated to use.	Koenig-Lewis et al. (2015)

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Items	Content	Original content	Adapted from
Perceived Security			
PS1	I consider that using a contactless payment method is not secure.	I consider that using a no-contact payment system is not secure.	Dutot (2015)
PS2	The risk of abuse of usage information (e.g., names of business partners, payment amount) is low when using contactless payment method.	The risk of abuse of usage information (e.g., names of business partners, payment amount) is low when using NFC mobile payment system.	Luna et al. (2017)
PS3	I am worried that information transferred by using contactless payment may be intercepted by other people.	I am worried that information transferred by using NFC may be intercepted by other people.	Dutot (2015)
PS4	I think that privacy is not guaranteed when using contactless payment.	I think that privacy is not guaranteed when using contactless credit card.	Eyuboglu et al. (2017)
PS5	I am afraid that the confidentiality of my financial transactions might get lost when using contactless payment.	I am afraid that the confidentiality of my financial transactions might get lost when using contactless credit card.	Eyuboglu et al. (2017)

Items	Content	Original content	Adapted from
Perceived Usefulness			
PU1	Using contactless payment makes me save time.	Using “service” makes me save time.	Nysveen et al (2005)
PU2	There are a high number of available contactless payment service.	There are a high number of available applications.	Agnieszka, Elaine & Robert (2004)
PU3	Using contactless payment makes it easier for me to	Using mobile payment makes it easier for me to conduct	Kim, Mirusmonov

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	conduct transactions.	transactions.	& Lee (2010)
PU4	I would find contactless payment a useful possibility for paying.	I would find mobile payment a useful possibility for paying.	Kim et al. (2010)
PU5	The range of contactless payment values available is adequate.	The range of payment values available is adequate.	Agnieszka et al. (2004)

Items	Content	Original content	Adapted from
Social Influence			
SI 1	People who are important to me think that I should use the contactless payment.	People who are important to me think that I should use the Internet.	Gupta (2008)
SI 2	People who influence my behaviour think that I should use the contactless payment.	People who influence my behaviour think that I should use the Internet.	Gupta (2008)
SI 3	I will use contactless payment if the service is widely used by people in my community.	I will use mobile credit card if the service is widely used by people in my community.	Tan et al. (2014)
SI 4	Contactless payment enables me to improve my social status.	Mobile credit card enables me to improve my social status.	Tan et al. (2014)

Items	Content	Original content	Adapted from
Compatibility			
C1	I would appreciate using contactless payment services instead of alternative modes of payment (e.g., pin and pay, cash, and cheque).	I would appreciate using mobile payment services in restaurant/cafe/bar instead of alternative modes of payment (e.g., credit card, cash).	Cobanoglu et al. (2015)
C2	Using a contactless payment fits well with the way I like to	Using a mobile payment at a restaurant/cafe/bar fits well	Cobanoglu et al. (2015)

	purchase products and services.	with the way I like to purchase products and services.	
C3	I believe that using contactless payment will enhance my lifestyle image.	I believe that using mPayment methods will enhance my lifestyle image.	Chen et al. (2008)
C4	I believe that using contactless payment will be fun.	I believe that using mPayment methods will be fun.	Chen et al. (2008)
C5	Using contactless payment would fit well with the way I like to manage my finances.	Using NFC payment would fit well with the way I like to manage my finances.	Thanh-Thao et al. (2015)
C6	Using contactless payment is completely compatible with my current situation.	Using Personal Work Station (PWS) is completely compatible with my current situation.	Moore et al. (1991)

Items	Content	Original content	Adapted from
Intention to adopt			
IA 1	During the next six (6) months, I intend to pay for purchase with contactless payment.	During the next six (6) months, I intend to pay for purchase with a mobile phone.	Kim et al. (2010)
IA 2	I will use contactless payment.	I will use mobile payment.	Zhou (2011)
IA 3	Now I pay for purchase with a contactless payment.	Now I pay for purchase with a mobile phone.	Kim et al. (2010)
IA 4	I plan to use contactless payment in the next month.	I plan to use mobile payment in the next month.	Oliveira et al. (2016)
IA 5	I will try to use contactless payment in my daily life.	I will try to use mobile payment in my daily life.	Oliveira et al. (2016)

3.4.2 Pilot Test

Before distributing the research questionnaire to the target respondents, a pilot test has been carry out. Pilot test done among 30 lectures in University

Tunku Abdul Rahman (UTAR). There are few changes in questionnaire were made after the pilot test. From the feedback, the explanation of the meaning of contactless payment in the questionnaire is not clearly for respondents to understand. Thus, the explanation of the meaning of contactless payment has added into the questionnaire. Besides, there are some grammar mistakes was pointed out from the feedback. According to the feedback, any grammar mistake should be corrected in order to avoid any confusion among the respondents.

Table 3.4.2: Pilot Test

Variables	Cronbach's Alpha
Perceived Ease of Use	0.931
Perceived Usefulness	0.808
Perceived Security	0.940
Social Influence	0.962
Compatibility	0.857
Intention to Adopt	0.980

Source: Developed for the search

According to Table 4.2, all of the variables are reliable due to the Cronbach's Alpha value of the variables are higher than 0.7. Intention to Adopt has the highest Cronbach's Alpha value which is 0.980 followed by Social Influence, Perceived Security and Perceived Ease of Use which are 0.962, 0.940 and 0.931. These four variables have scored above 0.9 of Cronbach's Alpha value. However, the others two variables which are Perceived Usefulness and Compatibility scored below 0.9 of Cronbach's Alpha value. The lowest Cronbach's Alpha value is Perceived Usefulness with 0.808 and the second lowest is Compatibility with 0.857.

3.5 Construct Measurement (Scales and Operation

Definition.)

In this research topic, appropriate scales of measurement are chosen for each variables. The measurement brings the meaning of observe carefully and deliberately the real world and is the essence of empirical research. Nominal, ordinal, interval and ratio are four types of measurement scales. In this research, ordinal scale are not using. This research applied the nominal and ratio scales in section A while applied interval ratio at section B. 5-point Likert scales are applied in section B. Although there are many researches using 7-point as their Likert scales, but this research found that the accuracy of 5-point Likert are more than enough for this research. Table below shown the scales of measurement for all the variables that examine in the section A and B.

Section B:	A	Perceived Ease of use	Interval	5-Point
Factors Affect	B	Perceived Security	Interval	5-Point
Intention to	C	Perceived of Usefulness	Interval	5-Point
adopt	D	Social Influence	Interval	5-Point
contactless	E	Compatibility	Interval	5-Point
payment	F	Intention to adopt	Interval	5-Point

3.5.1 Nominal scale

In nominal scale, the numbers were given to respondent to choose in the variable are not imply any ordering, and only use for data classifying. In the research topic of section A, question 1(Do the respondent using contactless payment), 2 (Race), 3 (Gender), 5 (Marriage status), 7 (Education level), 9 (Amount spend through contactless payment), 10

(sector using the contactless payment), 11 (type of contactless payment device) are using the nominal scale measurement. In those questions, the number of answer given by respondents are no ordering implied, but brings the meaning of its own.

	No	Objects/ Variables	Scales of Measurement	Likert Scales
Section A : (demographic information)	1	using contactless payment	Nominal	-
	2	Race	Nominal	-
	3	Gender	Nominal	-
	4	Age	Ratio	-
	5	Marriage status	Nominal	-
	6	Income levels	Ratio	-
	7	Education level	Nominal	-
	8	Frequency of using contactless payment	Ratio	-
	9	Amount spend through contactless payment	Nominal	-
	10	sector using the contactless payment	Nominal	-
	11	type of contactless payment device	Nominal	-

3.5.2 Interval scale

In the interval scale, the answer are carry the meaning of distance between attributes. Which means the interval scale not only express classification, but it also shows the distances between each interval either from low interval to high interval or high to low. In the research topic, the questions of section B are using 5-point Likert scale. In this, all number of answer 1 to 5 are represent the level of agreement. Those answers have the same distance from each other. In deep, number 5 represent strongly agreement follow by

4(agree), 3(neutral), 2(disagree), 1(strongly disagree) which show the agreement are descending order.

3.5.3 Ratio

In the ratio scale, number of zero also carry the true meaning. Ratio scale are the combination of other scales, but zero in ratio scale makes the measurement of scales unique. In the section A question 4(Age), 6(Income levels), and 8(Frequency of using contactless payment) are using ration scale. For example, in the question 8, 0 times means the respondent do not use contactless payment.

3.6 Data Processing

Statistical Package for Social Science (SPSS) version 23.0 is adopt to run the data processing for the purpose of this research topic. There will be classified as four steps for this data processing which included data checking, data editing, data coding and data cleaning.

3.6.1 Data Checking

At the early stage of data processing, data checking occurs to forma quality questionnaire for this research. There is some amendment done and correction being conducted after checking the questionnaire in term of its wording or grammar error. Before distributing the questionnaire to targeted respondents, the questionnaire need to be understandable and clear. Thus, it

is an important stage for researchers to clarify out the error omit in the research.

3.6.2 Data Editing

During the editing process, all the questionnaire that consists of insufficient information are rejected in order to increase the accuracy of the result. In addition, some minor changes are being amend after performing the pilot test based on the comments given. Besides, the flow of the sentences also restructure once again since the cross lining will confuse the targeted respondents.

3.6.3 Data Coding

Data coding in this research will be divided into Section A and Section. Demographic factors are located in Section A and code 1 and code 2 are set for the possession status of using contactless payment of respondents. Others than that, respondents are required to tick either one or more than one answers for each of the questions in Section A given. For Section B, 5-point of Liker Scale is being conducted. The scale will be ranked accordingly from 1 to 5 which stand for strongly disagree, disagree, neutral, agree and strongly agree.

3.6.4 Data Cleaning

Last step of data processing will be the data cleaning. After collecting all of the questionnaire distributed, some questionnaire that have problems need to be taken out from this research. For example, some questionnaire that do

not fulfill the requirement for this research like data missing or missing information have been taken out from this survey. Besides, some respondents that did not provide any scale or no ranking for each of the question would considered as neutral. This is to ensure the accuracy of the result of this study. After distributed out 500 sets of questionnaires, 81 sets of questionnaires do not take into consideration due to the insufficient information provided and it cannot be edited for further information.

3.7 Data Analysis

After all of the data was collected, the data being entered into the software in order to analyse and testing the hypothesis. Statistical Package Social Science (SPSS) and Microsoft Excel are the statistical tools that used to analyse the data.

3.7.1 Descriptive Analysis

Descriptive analysis is a brief descriptive that summarize a given data which can be a representation of sample and measure of it. The data from the questionnaire will be interpreted in a simple way for easier explanation. There will be a detailed explanation of the results by using table in Chapter 4.

3.7.2 Reliability Test

According to Twycross and Shields (2004), reliability is referring to stability, repeatability and consistency of results. Therefore, reliability test is to catch

the consistency and stability of the items that used to test the attributes of the intended measures. This is to ensure that the consistent results will acquired in identical situations on different opportunities (Twycross et al., 2004). Cronbach's alpha is a reliability coefficient that indicates how well a set of items or variables are positively correlated to another one (Rosaroso, 2015). Cronbach's alpha used to measure the scales' reliability by providing the estimates of consistency which expressed in number between 0 to 1 (Cabanillas et al., 2017). The higher the consistency reliability if the Cronbach's alpha is closer to 1. Based on the study of Hair, Black, Babin, and Anderson (2010), the standard acceptable value of Cronbach's alpha is 0.7 and above. This statement also supported by MacKenzie, Podsakoff and Jarvis (2005), the general lower limit for Cronbach's alpha of the variables is 0.7.

3.7.3 Pearson Correlation Coefficient

Commonly, Pearson Correlation Coefficient is apply to study the existing of relationship between both quantitative data and two variables. In simple term, Pearson Correlation Coefficient can indicate how strong the linear relationship between two continuous variables. Besides, it denoted as R and the range given is as follow:

$$-1 \leq 0 \leq +1$$

There are three types of correlation appear that used to indicate by considering as whether one of the variable increase tend to affect the other variable. An estimation of 0 give the assumption of there will be no correlation between two variables that taken into account. This also can be explained that one variable does not has the tendency to affect the other variable. Besides, the figure of -1 and below 0 implies that there is a negative relationship between independent variable and dependent variable. It can

also be said that there is a strong negative correlation exists between two variables and the data will be lie on a perfect straight line in downward sloping. If there is negative correlation, when one variable increase, the other variable will decrease, and vice versa. In the other hands, a positive correlation exists when the figures show more than 0 to +1. Since a positive correlation has the tendency to increase of one variable to another, the scatter plot will be a positive slope and upward sloping. Different value of correlation implies different strength of correlation. If the range fall between 0.00 to 0.19 or 0.00 to -0.19, it will be considered very weak, between 0.20 to 0.39 or -0.20 to -0.39 is considered weak, between 0.40 to 0.59 or -0.40 to -0.59 to be moderate, between 0.60 to 0.79 or -0.60 to -0.79 considered as strong and follow by 0.80 to 1.0 or -0.80 to -1.0 to be very strong.

3.7.4 Multiple Linear Regression Analysis

Multiple linear regression analysis is used to test the relationship between dependent variable and independent variable in a study. By using numerous independent variables, it is crucial for researchers to study all of the independent variables independently towards its dependent variable, by holding all other variables constant. In the recent study, intention to adopt contactless payment will be the dependent variable and independent variables will be classified into five which are perceived ease of use, perceived security, perceived usefulness, social influence and compatibility. To enrich this study, significance level of 1%, 5% and 10% will be tested.

Given the p-value is greater than 0.05, this result indicates that the null hypothesis will be rejected. In other words, the independent variable that taken into account is not significant at 5% level of significance. Conversely, if the p-value is less than 0.05, it means that there is a significant relationship

between the independent variable and dependent variable at the level of significance at 5%. Therefore, do not reject the null hypothesis. In the other hands, the beta value of each of the independent variables have a greater impact on the dependent variable. The greater the value of beta, the greater the tendency of the independent variable towards the dependent variable. However, a multicollinearity problem occurs when the independent variables are correlated. The coefficient of the model will become very sensitive to each of the changes taken. This result will definitely weaken the power of the regression model and do not feel the real effect of each independent variables in the study.

3.7.5 Independent sample T-test

The purpose of running this independent sample t-test is used to test the ordinary between genders (male and female) with the dependent variable. Besides, this test also used to pinpoint whether there is a significant difference between gender and intention to adopt contactless payment or no. Therefore, the Levene's test will be used to test the homogeneity of variances. For instance, when the significant value of Levene's test is more than 0.05, means the equality of variance is assumed to be same. Otherwise, when the significant value of Levene's test is less than 0.05, means the equality of variance will assumed not to be same (Biostats, 2016).

In addition, when the result shows significant value (2-tailed) of means for the T-test is lesser than 0.05, it means there is significant difference between gender and intention in adopting contactless payment. Otherwise, if the result shows greater than 0.5, it means no significant difference between gender and intention in adopting contactless payment.

3.7.6 One-way ANOVA

The purpose of this study used one-way ANOVA is due to identify the significant difference between individual groups of demographic factors where including race, education, age, marriage status and income level with the dependent variable (intention to adopt contactless payment). As referring to ANOVA table, when the significant value between the individual groups is smaller than 0.05, it means there is statistical significant between individual groups of demographics towards intention in adopting contactless payment.

Besides, the one-way ANOVA also including with the Duncan's test and Dunnett's test to identify the differences between groups. For instance, when the statistic value of homogeneity's variance is less than 0.05, Dunnett's test will be used. However, if the statistic value of homogeneity's variance is more than 0.05, Duncan test will be used. Therefore, this test is helps to identify the consumer's behavior between different groups towards the intention in adopting contactless payment.

3.8 Conclusion

Methodology is a common research strategy applied by most of the researcher to describe how the research is going to process and determine the methods of discuss. In the chapter 3, the research discuss about research design, sampling design, and method of data collection and construct measurement. Furthermore, this research also discourse the research instrument, data analysis and data processing. These research question and problem was discover and resolve by using methodology. Those discussion was demonstrated and presented in the chapter 3.

CHAPTER 4: RESEARCH RESULT

4.0 Introduction

In the chapter 4, the result collected from the survey will be analyse. With the analysis, the hypothesis described set at chapter 2 can get the rejection or acceptance. To doing this, some of the test will be undergo like reliability test, Person's correlation analysis, multiple regression analysis, independent-sample T test and one-way ANOVA test. The detail of the test as following below.

4.1 Descriptive Analysis

Descriptive analysis is a study on respondents to determine whether they are using contactless payment or not, frequency of using contactless payment in a month, amount spend by using contactless payment in a month, sector respondents usually use for contactless payment, type of contactless payment device that respondents usually use, race, gender, age, marriage status, incomes levels, and education levels.

4.1.1 Respondent Demographic Profile

Table 4.1.1: Use Contactless Payment

Use Contactless Payment	Frequency	Percentage (%)
Yes	419	100.0
No	0	0

Source: Developed for the search

Based on Table 4.1.1, it shows that the frequency of using contactless payment as one of the demographic information. There are gathered with 419 respondents have been chosen randomly for this research study purpose. Among 419 respondents, all of them are using contactless payment which represent 100% for this research.

Table 4.1.2: Race

Race	Frequency	Percentage (%)
Chinese	228	54.4
Malay	93	22.2
Indian	98	23.4

Source: Developed for the search

According to Table 4.1.2, race has become one of the demographic information for this research and it will be classified into three groups which are Chinese, Malay and Indian. By digesting the data above, Chinese is the majority respondents for this research which are 228 respondents (54.4%). Moreover, 98 out of 419 respondents are Indian which is 23.4% and followed by Malay which represents 93 respondents (22.2%).

Table 4.1.3: Gender

Gender	Frequency	Percentage (%)
Male	199	47.5
Female	220	52.5

Source: Developed for the search

Based on the information above, the size of female respondents is greater than male respondents. Among all of the respondents, female respondents have gathered 220 people which is 52.5% for this research study. Others than that, there are total 199 male respondents which represents 47.5% are being conducted for this research.

Table 4.1.4: Age

Age	Frequency	Percentage (%)
Below 18 years old	30	7.2
18-25 years old	161	38.4
26-35 years old	102	24.3
36-45 years old	61	14.6
46-55 years old	35	8.4
Above 55 years old	30	7.2

Source: Developed for the search

From table 4.1.4, the age that below 18 years old consist of 7.2%. The age of 18 – 25 years old is the highest percentage among the age group. The 26 – 35 years old had 24.3% while the age of 36 – 45 years old consist of 14.6%. The 46 – 55 years old is 8.4% which are the second lowest among the age group. The age above 55 years old having the same percentage as the below 18 years old which is 7.2% also the lowest percentage among the age group.

Table 4.1.5: Marriage Status

Marriage Status	Frequency	Percentage (%)
Single	219	52.3
Married	175	41.8
Divorced	21	5.0
Widow	4	1.0

Source: Developed for the search

From the table 4.1.5, the marriage status of single tends to get the highest percentage 52.3% among the other. The married having the second highest percentage which are 41.8%. The divorced getting 5.0% out of 100%. The widow having the lowest percentage of 1.0%.

Table 4.1.6: Income Levels

Income Levels (Monthly)	Frequency	Percentage (%)
Below RM1000	78	18.6
RM1000-RM2000	78	18.6
RM2000-RM3000	120	28.6
RM3000-RM4000	72	17.2
RM4000 and above	71	16.9

Source: Developed for the search

Based on the table 4.1.6, there are 78 (18.6%) respondents have the income level which below than RM1000, 78 (18.6%) respondents have income around RM1000 to RM2000, 120 (28.6%) respondents have income between RM2000 to RM3000, 72 (17.2%) respondents have the income about RM3000 to RM4000, and 71 (16.9%) respondents have the income more than RM4000.

Table 4.1.7: Education Levels

Education Levels	Frequency	Percentage (%)
SPM / O-level	91	21.7
STPM / A-level	70	16.7
Diploma	97	23.2
Bachelor's Degree	131	31.3
Master's Degree	22	5.3
PhD	2	0.5
Professional Certificate (Eg: ACCA/CPA/CFA/CIMA)	4	1.0
Others	2	0.5

Source: Developed for the search

According to table 4.1.7, the amounts of respondents that have SPM/O-level and STPM/A-level are 91 (21.7%) and 70 (16.7%) respectively. 97 (23.2%) of the respondents have Diploma, 131 (31.3%) respondents have Bachelor's Degree, and

22 (5.3%) respondents have Master's Degree. For the amounts of respondents who have PhD and Professional Certificate, there are only 2 (0.5%) and 4 (1.0%). Lastly, only 2 (0.5%) of the respondents have other education level which is home education.

Table 4.1.8: Frequency of using Contactless Payment in a month

Frequency of using Contactless Payment in a month	Frequency	Percentage (%)
0 times	0	0
1-2 times	166	39.6
3-4 times	144	34.4
5-6 times	65	15.5
7 times or more	44	10.5

Source: Developed for the search

The tables 4.1.8 shows the frequency of respondents using contactless payment in a month. Among the 419 selected respondents, about 166 (39.6%) of them are using contactless payment 1 to 2 times per month. The following respondents who uses contactless payment 3-4 times per month is consists of 144 which achieve a rate of 34.4%. Besides, there is also consists of 65 (15.5%) respondents who using contactless payment 5-6 times per month. However, the most frequency users of contactless payment consist of 44 respondents where achieve a rate of 10.5% which is the lowest rate among the total respondents. In addition, the respondents who use contactless payment at 0 times per month is consider a non-user of contactless payment, so they are already been filtering out in order to identify an accurate result.

Table 4.1.9: Amount spend by using Contactless Payment in a month

Amount spend by using Contactless Payment in a month	Frequency	Percentage (%)
Below RM50	60	14.3
RM50-RM100	108	25.8
RM100-RM300	119	28.4
RM300-RM500	78	18.6
RM500 and above	54	12.9

Source: Developed for the search

The table 4.1.9 shows the amount spend by respondents in a month by using contactless payment. Among the 419 selected respondents, about 119 (28.4%) of them usually spend around RM100 to RM300 per month by using contactless payment which achieve the highest frequency user. On the other hands, there is about 54 of respondents spend RM500 and above per month by using contactless payment which achieve a rate of 12.9% and consider the lowest among the total respondents. Furthermore, the respondents who spend around RM50 to RM100 per month by using contactless payment consist of 108 which achieve a rate of 25.8%. The following is the respondents who spend around RM300 to RM500 in a month by using contactless payment consist of 78 which is 18.6%. Additionally, the respondents who spend around RM50 and below per month by using contactless payment consist of 60 which achieve a rate of 14.3%. However, respondents who spend RM50 and below per month by using contactless payment is consider a low frequency user of contactless payment.

Table 4.1.10: Sector that usually use for Contactless Payment

Sector that usually use for Contactless Payment	Frequency	Percentage (%)
Food and Beverage	216	51.4
Daily Supplies	168	40.0
Clothing	140	33.3
Petrol	151	36.0
Others	88	21.0

Source: Developed for the search

The table 4.10 show the market sector of respondent usually paying by using contactless payment. Food and beverage is the biggest sector for the respondent to consume. There are 216 (51.4%) respondents spending by using contactless payment in this sector. The following major spending sector is the daily supplier. 168 out of 351 respondents (40%) are using contactless payment to settle their daily supplies payment. For the clothing sector, there was 140 (33.3%) respondents are pay the bill by using contactless payment. The second minor sector of the respondents pay they are by contactless payment is petrol sector. 151 (36%) of respondents using contactless payment as their petrol bill settlement method. The least sector is the others sector. The others sector included transportation, entertainment and gaming sector. There were only 88 respondents which is 21% only using contactless payment method as their payment settlement method.

Table 4.1.11: Type of Contactless Payment device used

Type of Contactless Payment device used	Frequency	Percentage (%)
Contactless Card	370	88.1
NFC-Enabled Mobile	116	27.6
Wristband / Gear	37	8.8

Source: Developed for the search

In the Malaysia market, the devices for contactless payment this research tested is only 3 types which is contactless card, NFC-enabled mobile, and wristband (gear). For the contactless card, 370 respondents which is 88.1% among all respondent are currently using this device. At Malaysia nowadays, all the credit card and debit card are come along with NFC chip together. So not surprising contactless card was the most popular device for contactless payment. NFC enable mobile is the second largest device using by respondents. Among 351 respondents, 116 (27.6%) of them are using this device to make payment. The least device the respondents used was wristband. Its only 37 (8.8%) of respondents using of it. This probably the wristband was costly for the respondents.

4.2 Reliability Test

Table 4.2.1: Reliability Test

Variables	Cronbach's Alpha
Perceived Ease of Use	0.761
Perceived Usefulness	0.727
Perceived Security	0.789
Social Influence	0.858
Compatibility	0.829
Intention to Adopt	0.748

Source: Developed for the search

Table 4.1 shows the result of reliability test. In this test, the aim is to test the internal consistency by using the result of Cronbach's alpha for dependent and independent variables. For the dependent variable, the Cronbach's alpha for intention to adopt is 0.748. While for independent variables, the result was collected as below: perceived ease of use 0.761, perceived security 0.789, perceived usefulness 0.727,

social influence 0.858 and compatibility 0.829. Since the Cronbach's alpha of all variables are more than 0.7, so do not has any question from survey has to remove.

4.3 Pearson Correlation Test

Table 4.3.1: Pearson Correlation Test

		Correlations					Intention to Adoption
		Perceived Ease of Use	Perceived Usefulness	Perceived Security	Social Influence	Compatibility	
Perceived Ease of Use	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	419					
Perceived Usefulness	Pearson Correlation	.465**	1				
	Sig. (2-tailed)	.000					
	N	419	419				
Perceived Security	Pearson Correlation	.108*	.152**	1			
	Sig. (2-tailed)	.027	.002				
	N	419	419	419			
Social Influence	Pearson Correlation	.250**	.459**	.304**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	419	419	419	419		
Compatibility	Pearson Correlation	.346**	.519**	.373**	.751**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	419	419	419	419	419	
Intention to Adoption	Pearson Correlation	.399**	.508**	.281**	.516**	.692**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	419	419	419	419	419	419

Source: Developed for the search

Table above shows the result of Pearson Correlation after the test was undergo. This test is to figure out the linear correlation of dependent variable and independent variables. As the result collected, the value of Pearson correlation of intention to adopt contactless payment with perceived ease of use is 0.3999. Follow by the

perceived usefulness 0.508, perceived security 0.281, social influence 0.516 and compatibility 0.692.

4.4 Multiple Linear Regression Analysis

In this study, multiple linear regression analysis is used to determine the relationship of dependent variable and independent variables that have been chosen. Table below clearly specified the result of propose multiple regression analysis for this study.

Table 4.4.1 Multiple Linear Regression Analysis

Dependent Variable:

Intention to Adopt Contactless Payment

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	.948	.200		4.740	.000		
PEU	.156	.047	.130	3.350	.001	.766	1.306
PU	.162	.044	.159	3.695	.000	.625	1.601
PS	.026	.026	.037	1.020	.308	.856	1.168
SI	-.020	.032	-.033	-.626	.532	.427	2.344
C	.458	.045	.576	10.286	.000	.368	2.720

$R = 0.724$

$R^2 = 0.525$

Sig. value = 0.000

PEU = Perceived Ease of Use

PU = Perceived Usefulness

PS = Perceived Security

SI = Social Influence

C = Compatibility

Based on table above, it illustrate the multiple linear regression analysis that adopted to investigate the relationship between intention to adopt contactless

payment (dependent variable) and independent variables. The B value falls under unstandardized coefficient tells the relationship between both independent and dependent variables either in the form of positive or negative term. Out of five independent variables, social influence will be the only variable that has a negative relationship towards intention to adopt contactless payment due to its negative symbol. Otherwise, it clearly stated that perceived ease of use, perceived usefulness, perceived security and compatibility have positive relationship with the dependent variable.

This research will be tested at the significance level of 5% in order to see whether there is a significant relationship between all of the independent variables and dependent variable. Based on the decision rule given, if the p-value is smaller than 0.05, reject H_0 (There is no significant relationship between independent variable and dependent variable). In other words, there will be a significant relationship between independent variable and dependent variable if H_0 being rejected. Otherwise, do not reject H_0 if the p-value is greater than significant level 0.05 which means that there will be an insignificant relationship between the independent variable and dependent variable.

In short, the results above show that the p-value for perceived ease of use ($p=0.001$), perceived usefulness ($p=0.000$) and compatibility ($p=0.000$) are less than significant level of 0.05, so three of these independent variables have significant relationship towards intention to adopt contactless payment (dependent variable). Conversely, both of perceived security ($p=0.308$) and social influence ($p=0.532$) are insignificant to the dependent variable since the p-value is greater than 0.05. Therefore, perceived security and social influence have been taken out of this study and the hypothesis result as show in Table 4.5.2.

Table 4.4.2 Hypothesis Result

Hypothesis	P-value	Result
1. H1 ₀ : There is no significant relationship between perceived ease of use and the intention to adopt contactless payment.	0.001	Significant
2. H2 ₀ : There is no significant relationship between perceived usefulness and the intention to adopt contactless payment.	0.000	Significant
3. H3 ₀ : There is no significant relationship between perceived security and the intention to adopt contactless payment.	0.308	Not Significant
4. H4 ₀ : There is no significant relationship between social influence and the intention to adopt contactless payment.	0.532	Not Significant
5. H5 ₀ : There is no significant relationship between compatibility and the intention to adopt contactless payment.	0.000	Significant

Source: Developed for the search

Table 4.4.3 Multi Regression Model after removed insignificant

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	t		Tolerance	VIF
1 (Constant)	1.015	.190		5.340	.000		
PEU	.158	.047	.131	3.394	.001	.769	1.301
PU	.156	.043	.153	3.603	.000	.638	1.567
C	.452	.032	.568	14.176	.000	.717	1.395

$R = 0.723$

$R^2 = 0.523$

Sig. value = 0.000

PEU = Perceived Ease of Use

PU = Perceived Usefulness

C = Compatibility

Based on the table above, both of the perceived security and social influence has been removed out of the multi regression model due to its insignificant relationship towards the dependent variable. From this research, table above showed that there are three independent variables that consist of significant relationship in explaining the intention to adopt contactless payment which are perceived ease of use, perceived usefulness and compatibility. Besides, the figure of coefficient of correlation (R) is 0.723 which represents the degree of both dependent variable and independent variables are correlated with each other. In addition, coefficient of determination value (R^2) showed 0.523 and this figure indicates that 52.3% of intention to adopt contactless payment are explained by these three independent variables.

Equation 4.1

$$INT = \beta_1 + \beta_2 PEU + \beta_3 PU + \beta_4 C$$

$$INT = 1.015 + (0.158)PEU + (0.156)PU + (0.452)C$$

Equation 4.1 can be expressed as below:

$\beta_2 = 0.158$ for every increasing 1 unit of perceived ease of use, on average, the intention to adopt contactless payment will increase by 0.158 unit.

$\beta_3 = 0.156$ for every increasing 1 unit of perceived usefulness, on average, the intention to adopt contactless payment will increase by 0.156 unit.

$\beta_4 = 0.452$ for every increasing 1 unit of compatibility, on average, the intention to adopt contactless payment will increase by 0.452 unit.

4.5 Independent-sample T-test

Table 4.5.1: Independent Sample

		Levene's Test for		t-test for Equality of Means		
		Equality of Variances		t	df	Sig. (2-tailed)
		F	Sig.			
Intention to Adopt	Equal variances assumed	.239	.625	.613	417	.540
	Equal variances not assumed			.614	413.760	.540

H₀: There is no significant difference between intention to adopt contactless payment and gender of the respondents.

H₁: There is significant difference between intention to adopt contactless payment and gender of the respondents.

According to the table above, the significance value of Lavene's test of intention in adopting contactless payment is 0.625 where the significance value is larger than 0.05. Hence, the null hypothesis is not rejected. As a result, there is no difference between the construct of intention to adopt contactless payment and gender of respondents. Additionally, the gender has equal variance with the intention to adopt contactless payment.

Besides, the value of significance (2-tailed) for intention to adopt contactless payment is 0.540 where it is larger than 0.05. Therefore, the null hypothesis is not rejected. In conclusion, there is no difference between intention in adopting contactless payment and gender of respondents.

4.6 One-way ANOVA

One-way ANOVA is used to test is there any significant difference between the demographic factor (age, income levels and education levels) and the intention to adopt contactless payment.

Table 4.6.1: One-Way ANOVA for age

Age	ANOVA (Sig.)	Test of Homogeneity of Variances	
		>0.05, There is no	
Intention to Adopt	0.256	significant difference between groups	0.106

H7₀: There is no significant difference between age of the respondents and intention to adopt contactless payment.

H7₁: There is significant difference between age of the respondents and intention to adopt contactless payment.

According to the table 4.6.1 shows that, the ANOVA significant value is 0.256 which is larger than 0.05. Thus, null hypothesis is not rejected. Therefore, there is no significant difference between intention to adopt contactless payment and age of the respondents.

Table 4.6.2: One-Way ANOVA for income levels

Income Level	ANOVA (Sig.)	Test of Homogeneity of Variances	
		>0.05, There is no	
Intention to Adopt	0.000	significant difference between groups	0.001

H8₀: There is no significant difference between income levels of the respondents and intention to adopt contactless payment.

H8₁: There is significant difference between income levels of the respondents and intention to adopt contactless payment.

Based on table 4.6.2, it shows that the ANOVA significant value is 0.000 which is less than 0.05, thus rejected H8₀. There is significant difference between income levels of the respondents and intention to adopt contactless payment. Since the significant value of test of homogeneity of variances is 0.001 which is less than 0.05, therefore Dunnett T3 is used to determine the difference.

Table 4.6.2.1: Dunnett's Post Hoc Test for income levels

	Income Levels (I)	Income Levels (J)	Mean Difference (I-J)	Sig.
Dunnett T3	Below RM1000	RM1000-RM2000	-0.26667*	0.039
		RM2000-RM3000	-0.36885*	0.000
		RM3000-RM4000	-0.27607*	0.038
		RM4000 and above	-0.39094*	0.001
	RM1000-RM2000	Below RM1000	0.26667*	0.039
		RM2000-RM3000	-0.10218	0.683
		RM3000-RM4000	-0.00940	1.000
		RM4000 and above	-0.12427	0.672
	RM2000-RM3000	Below RM1000	0.36885*	0.000
		RM1000-RM2000	0.10218	0.683
		RM3000-RM4000	0.09278	0.845
		RM4000 and above	-0.02209	1.000
	RM3000-RM4000	Below RM1000	0.27607*	0.038
		RM1000-RM2000	0.00940	1.000
		RM2000-RM3000	-0.09278	0.845
		RM4000 and above	-0.11487	0.806
	RM4000 and above	Below RM1000	0.39094*	0.001
		RM1000-RM2000	0.12427	0.672
		RM2000-RM3000	0.02209	1.000
		RM3000-RM4000	0.11487	0.806

*. The mean difference is significant at the 0.05 level.

Based on the table 4.6.2.1, the mean difference shows that the category of income levels below than RM1000 has the lowest intention to adopt contactless payment, followed by the level incomes of RM1000-RM2000, RM3000-RM4000, RM2000-RM3000. While category of income levels RM4000 and above has the highest intention to adopt contactless payment.

Table 4.6.3: One-Way ANOVA for education levels

Education Levels	ANOVA (Sig.)	Test of Homogeneity of Variances
Intention to Adopt	0.000	0.188

>0.05, There is no significant difference between groups

H₀: There is no significant difference between education levels of the respondents and intention to adopt contactless payment.

H₁: There is significant difference between education levels of the respondents and intention to adopt contactless payment.

Based on the table 4.6.3, H₀ is rejected since the ANOVA significant value is 0.000 which is lower than 0.05. Thus, there is significant difference between education levels of the respondents and intention to adopt contactless payment. Duncan is used to interpret the difference since the significant value of test of homogeneity of variances is more than 0.05, which is 0.188.

Table 4.6.3.1: Duncan Test for education levels

		N	Subset for alpha = 0.05		
			1	2	3
Duncan ^{a,b}	Others	2	3.0000		
	SPM / O-level	91	4.0989		
	Diploma	97	4.0990		
	Bachelor's Degree	131	4.1252		
	STPM / A-level	70	4.2371		
	Master's Degree	22	4.3727		
	Professional Certificate (Eg: ACCA/CPA/CFA/CIMA)	4	4.6000	4.6000	
	PhD	2			5.0000
	Sig.		1.000	.139	.174

Based on table 4.6.3.1, it illustrate that PhD has the highest intention to adopt contactless payment. Followed by Professional Certificate, Master’s Degree, STPM/A-level, Bachelor’s Degree, Diploma, SPM/O-level, and others.

4.7 Conclusion

This chapter used the data to discuss about the descriptive analysis, pilot test, Cronbach’s alpha reliability test, Pearson’s correlation analysis, multiple regression analysis, independent sample using t-test, and one-way ANOVA test. In the following chapter, will further discuss about the major findings and conclusion of the research.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In this chapter, the research result will be summarized and discuss base on statistical analysis in the chapter 4. Other than that, this chapter also will discuss on managerial implication and research implication. Lastly, limitation and recommendation for future study also will be discuss.

5.1 Statistical Analysis

There are total 419 questionnaire including hard copy questionnaire and online questionnaire are collected from the respondents. All of the respondents are contactless payment user (100%). In the research, most of the respondents' race are Chinese (54.4%). The male respondents consist of 47.5% while female respondents having 52.5%. Respondents mostly from the age of 18-25 years old which are 38.4%. More than half of the respondents are single (52.3%). Majority of the respondents having a monthly income level of RM2000-RM3000 (28.6%). Education level of respondent mostly from Bachelor's Degree level which are 31.3%. Frequency for most respondent to use contactless payment per month are 1-2 times (39.6%). The range of most respondent spend on contactless payment are between RM100-RM300 (28.4%). Food and beverage are the sector usually use for contactless payment (51.4%). Contactless card are the type of device mostly used by respondents to use contactless payment (88.1%).

In this study, the dependent variables is the intention to adopt Contactless payment while the independent variables are perceived ease of use, perceived usefulness, perceived security, social influence and compatibility.

5.2 Results Summary

Table 5.2.1: Reliability Test

Variables	Cronbach's Alpha
Perceived Ease of Use	0.761 (>0.7)
Perceived Usefulness	0.727 (>0.7)
Perceived Security	0.789 (>0.7)
Social Influence	0.858 (>0.7)
Compatibility	0.829 (>0.7)
Intention to Adopt	0.748 (>0.7)

Table 5.2.2: Pearson's Correlation Analysis

Independent Variables	Pearson Correlation	Findings
Perceived Ease of Use	0.399	Moderate Positive Relationship
Perceived Usefulness	0.508	Moderate Positive Relationship
Perceived Security	0.281	Weak Positive Relationship
Social Influence	0.516	Moderate Positive Relationship
Compatibility	0.692	Strong Positive Relationship

Table 5.2.3: Multiple Linear Regression Analysis

Independent Variables	Sig. Value	Findings
Perceived Ease of Use	0.001	Significant (<0.05)
Perceived Usefulness	0.000	Significant (<0.05)
Perceived Security	0.308	Insignificant (>0.05)
Social Influence	0.532	Insignificant (>0.05)
Compatibility	0.000	Significant (<0.05)

Table 5.2.4: Independent-Sample T-test

Factor	Sig. Value	Finding
Gender	0.625	(>0.05, No significant difference)

Table 5.2.5: One-way ANOVA

Factors	Sig. Value	Findings
Age	0.256	(>0.05, No significant difference)
Income Levels	0.000	(<0.05, Significant difference) Higher the income levels, higher the intention to adopt contactless payment
Education Levels	0.000	(<0.05, Significant difference) Higher the education levels, higher the intention to adopt contactless payment

5.3 Discussion of Major Finding

According to the multiple regression analysis, the decision rule clearly stated that H_0 is being rejected if the p-value is smaller than 0.05, which indicates that there is a significant relationship between independent variables towards intention to adopt contactless payment in Malaysia. Based on the results given, perceived ease-of-use, perceived usefulness and compatibility are significant towards the dependent variable since its p-value is not exceed 0.05. In other words, three of these independent variables play an influential role towards intention to adopt contactless payment in Malaysia. In contrary, both of the social influence and perceived security have been removed out of the model since its p-value is greater than 0.05. In simple term, this stated that social influence and perceived security are not related to intention to adopt contactless payment in Malaysia.

5.3.1 Relationship between Perceived ease of use and the Intention to Adopt Contactless Payment in Malaysia

In this research, the result generated from multiple regression analysis is less than 0.05 as stated in table 4.5.1. Based on the decision rule the H_0 should be rejected and hence can conclude that perceived ease of use has significant relationship with intention to adopt contactless payment in Malaysia. The result is match with Johnson, Kiser, Washington and Torre (2018) which the study also implied there is a positive impact of perceived ease of use on intention to adopt contactless payment. The study stated if the payment system is consider perceived of unclear and not friendly use for consumer, then the intention for consumer to adopt will be reduce.

The result after the examine get is opposite with the Tan, Ooi, Leong and

Lin (2014), Aw, Khalil, Emad and Janejira (2009). This maybe is causes by sampling frame chosen. If the researcher focus on young respondents, then they have indispensable knowledge on the electronic payment even the contactless payment. Therefore, there was a high chances that they not feel the contactless payment was difficult to learn.

5.3.2 Relationship between perceived usefulness and Intention to Adopt Contactless Payment in Malaysia

Based on the result from the research, perceived usefulness have a significant relationship with intention to adopt contactless payment. This statement are supported by Leong, Hew, Garry, and Ooi (2013) and Paul, Oliver, and Bernd (2009). In other words, perceived usefulness are affecting the intention of consumer in adopting contactless payment. There are probability that perceived usefulness will enhance and improve the individual performance on using a new technology (Davis, 1989). Thus, the intention of adopting contactless payment by the consumer will increase if the effectiveness contactless payment being improved. In other word, perceived usefulness is the main factor that affect the attitude of consumer to try to adopt the new technology such as contactless payment. This also supported by Paul, Oliver, and Bernd (2009) and Davis (1989). Davis (1989) also stated that the central antecedent to the attitude toward using a technology is perceived usefulness which proposes by TAM.

5.3.3 Relationship between Perceived Security and Intention to Adopt Contactless Payment in Malaysia

In this study, perceived security is found to be insignificant towards the

intention to adopt contactless payment. However, this result is contradicts with some past studies (Vejacka, 2015; Cabanillas, Luna and Ríos, 2017; Luna, Ríos, Cabanillas and Luna, 2017; Al-Amri, et al., 2016) where perceived security is significant towards the intention to adopt.

The result of this study is accordance with Ooi, Chong and Hew (2014) study that showed the perceived security was no a crucial factor that will affect the consumer intention to adopt contactless payment. Perceived security do not seem to affect the intention to adopt contactless payment for those users who are using this payment system. This result is supported by Moroni, Talamo and Dimitri (2015) where the study stated that even though users have raised the issue on security, demonstrating attention for the topic, but it still does not affect the users' final decision to adopt the system. For non-users, perceived security is the main reason why they do not use the system (Moroni, Talamo and Dimitri. 2015). While for those users who already using the system, security is not a concern anymore. Other than that, perceived security may not a major barrier of new technology and innovation acceptance anymore. Consumer low concern towards security has indicates that users has overcoming this barrier slowly. Aydin and Burnaz (2016) also concluded that consumer concern about the technology's perceived ease of use and perceived usefulness instead of concern about the security

5.3.4 Relationship between Social Influence and Intention to Adopt Contactless Payment in Malaysia

Based on the result given, social influence has been removed out the model due to its p-value is greater than significant level 0.05. In other words, this result indicates that there is an insignificant relationship between intention

to adopt contactless payment and social influence. Although many of the past studies keeping emphasized on that social influence tends to impact in behavioural intention (Gupta et al., 2008; Venkatesh et al., 2000; Tan et al., 2013), however, this study implied that there is no relationship between social influence and intention to adopt contactless payment in Malaysia. Corresponding to the results obtained from Wen (2016) research, it believed that social influence does not has an essential role and tends to have a weaker impact towards the adoption rate at the beginning stage. The contactless payment method is still not widely adopted in Malaysia and therefore social influence unable to bring an impact to influence the adoption process. In short, the effect of social influence on adoption is based on the consumer attitude and decision making, social influence may be stronger as the contactless payment is publicly consumed in the market.

5.3.5 Relationship between Compatibility and Intention to Adopt Contactless Payment in Malaysia

According to the research result, the compatibility is significant with the intention to adopt contactless payment due to the p-value is less than the significant level of 0.05. Or else, it can be means that compatibility are correlated with the intention to adopt contactless payment. According to Luna, Montoro-Ríos, Liébana-Cabanillas and Luna (2017) study said that phase of introduce contactless payment to the market should be compatible with people's lifestyle as it could be a subjective norms to reflected the current trend.

Furthermore, the result also match with the research of Oliveira et al. (2016) where the study mentioned that compatibility can be the most important proposition to explain the consumer intention to adopt contactless payment.

The reason is that compatibility can be used to reinforce the consumer's expectancy and intention in adopting a new technology. In short, if the consumer think that contactless payment is compatible with his/her lifestyle, then the probability of the person adopt in this technology will be higher.

5.3.6 Significant Difference between Gender, Age, Income Levels, Education Level and Intention to Adopt Contactless Payment

According to Chawla and Joshi (2017) study argued that gender has significant effect on consumer's intention to adopt contactless payment where female have higher probability to adopt contactless payment compare to male. However, Yuan, Liu, Yao and Liu (2016) study mentioned that gender does not significantly affect the consumer's intention to adopt contactless payment where the result is match with this research. In addition, Garry, Ooi, Chong and Hew (2014) study also stated that gender does not significantly affect consumer's intention in adopting contactless payment. In short, it can clarified that in this digital world, man and women are having the same interested in adopting new technology. The reason is that both gender have the equal willingness in trying to make their life easier and simpler. Therefore, the result shows no significant different between gender and consumer's intention to adopt contactless payment in current trend.

This study has showed that there is no significant difference between age and intention to adopt contactless payment. In the other words, the result showing that the age will not affect the intention of consumer to adopt contactless payment. While most of the past research got the result showing that age have a significant difference with intention to adopt contactless payment. Which

mean the higher the age of consumer the lower the intention to adopt contactless payment. But however the result of the study are supported by Dabholkar, Bobbit, and Lee (2003), which clarify that the intention of adopting will not affected by the age. The intention of adopting will be affect due to the consumer are lack of information and cause they do not have confidence on adopting contactless payment.

This study has showed that there is significant difference between income levels and intention to adopt contactless payment. The result showed that higher the income levels of consumer, higher the intention to adopt contactless payment. This result is accordance with Dahlberg and Oorni (2007). The consumer with higher income level will have a higher spending habit. Due to this they have higher willingness and intention to adopt contactless payment which will save their time in every transactions. Which also mean the income level will directly affect the intention of adopting contactless payment.

Furthermore, the result presented there was a significant difference between education levels of Malaysian with the intention to adoption of contactless payment. This is clarify showed the education levels will directly affect the intention to adopt the contactless payment at Malaysia. This result was supported by Daud, Kassim, Said, Noor (2011) and Amin, Hamid, Lada and Anis (2008) which both also get the result of significant difference between these variables. While in the Duncan test, the result showed approximate the higher the education levels, the higher the intention on adopt the contactless payment. Although Duncan test tells the adoption from Phd education levels are higher than professional certificate education levels, but at overall result, still can conclude that in the Malaysia, the higher the education levels, the higher the intention on adoption of contactless payment.

5.4 Implication of the Study

5.4.1 Managerial Implication

Firstly, the usefulness of contactless payment method should be not merely in the certain areas. The government or policy makers shall undertakings various programmes to enable the availability of contactless payment terminals especially in rural parts. Once government pushing harshly for new methods of contactless payment which enhance the substitution of another payment method, the more functionalities get promoted, consumers are more likely to adopt it due to its convenient and easy to access or use. Similarly, banks should lend a hand in supplying the Near Field Communication (NFC) terminal in the market. This will definitely provide a positive impression of usefulness in order to increase the intention to adopt contactless payment for both users and non-users as well.

Besides, it is important to retailers to have payment options and well equipped with contactless payment terminals in order to meet the customers' need which correspond to the compatibility. By taking perceived ease-of-use into consideration, people nowadays are value speed, convenience and ease in the daily life. When educating employees, retailers should highlight on the easy features of Near Field Communication (NFC) devices as compared to others payment solutions. Likewise, educational staffs would like to share their experience on how capable in using contactless payment and hence make customers feel more comfortable to spend by using contactless payment. Therefore, education for staffs and customers is the key to encourage adoption of contactless payment. It is undeniable that the benefits of using contactless technology are saving time and convenience and this seems like a most straightforward and convenient option to make payment rather than using cash or pin-based method. In short, it is important

for retailers to have a point-of-sale payment option that allows customers 'tap and go' for items instantly.

5.4.2 Research Implication

In this study, the independent variables which shows a significant relationship with consumer's intention to adopt contactless payment is including perceived ease of use, perceived usefulness and compatibility. However, there are another two independent variables which is perceived security and social influence shows no significant relationship in affecting the consumer's intention to adopt contactless payment. From that, it can means that current contactless payment users do not take security and social influence as consideration while adopting this technology. Consequently, the future researcher are invited to use this research as allusion as it may help the researcher in further identification on the consumer's behavior in adopting contactless payment in Malaysia perspective.

On the other hands, most of the past studies shows perceived security and social influence is significant in affecting the consumer's intention to adopt contactless payment especially the elder age respondents. This is because those elder consumers are concerned the risk of financial lost while using this application and with strong mentality where they will not easily been influence by others. Therefore, this study may help researchers especially Malaysian's researcher to improve their knowledge about the consumer's behavior in adopting contactless payment in Malaysia. This is because this research is fully examine from the Malaysia's citizen with difference states. In addition, the government and researcher also encourage to use the information in this study as a platform for future analysis on consumer's behaviour in adopting new technology. The reason is this research is enable

researchers to enhance their understanding on consumer's behavior in adopting new technology in the current trend and can also help in identifying the technique of attracting the non-user of contactless payment to become a user. Therefore, at the same time, it may help to boost up the usage of contactless payment in Malaysia.

In addition, this research found out that the social influence which incorporated in the model of UTAUT is against the theory. Based on the result, it shows there is no significance relationship between social influence and the adoption of contactless payment. Apart from that, both of the theoretical model of RTA and DOI that added in to enhance the consumer attitude toward the innovation technologies. The results presented that the perceived security has an insignificant with the dependent variable. While for the compatibility, it shows there is a significance relationship with the adoption of contactless payment in Malaysia. In a nutshell, this research enrich government or policy makers to implement new policy or regulations by violating the security issues and social influence to enhance the adoption rate of contactless payment in Malaysia' context.

5.5 Limitations

This research is only restricted to the current period of time and behavioural of consumer may change time to time. The evolution of new technology may provide another consistent insight in term of adoption of contactless payment.

In addition, this study only takes into consideration contactless payment users' perspective and restrict to understand the non-users behavioural perspective since there may be a significant behavioural difference between users and non-users. On

the other hands, the intention to adopt contactless payment is not only dependable on the consumers' perspective but also need to take into consideration of the availability of point-of-sale (POS) terminals.

The final result that obtained from this study showed that there are only three independent variables which are perceived ease of use, perceived usefulness and compatibility are significant to the intention to adopt contactless payment. In short, the independent variables are not sufficient to interpret the dependent variable. Those independent variables are only explained 52.3% of the dependent variable and there is a chance for other suitable independent variables to be include in further studies

5.6 Recommendations for Future Study

In view that contactless payment is still at the early stage, more future studies should be carried out towards Malaysia' consumers to understand true phenomenon and capture the details of consumer in adopting contactless payment in Malaysia. Besides, a longitudinal study should be conducted in the future in order to identify and make comparison with current research model due to change in period of time. Therefore, whether there is any changes on the consumer buying behaviour can be detect and a clearer observation and accurate figures insight towards consumer intention to adopt contactless payment. Since the contactless payment is considered at the infancy stage, it is crucial to carry out a longitudinal study.

It is undeniable that there will be behavioural different between users and non-users towards intention to adopt contactless payment. Since this research is mainly focus on the users' perspective, the future researchers are suggested to take non-users' perspective into consideration in order to obtain more accurate results of the overall

perspective. In this study, the result on security showed an insignificant relationship with the former user but there may have a significant relationship with non-user.

5.7 Conclusion

In a nutshell, the aim of the study is to study the element which will influence the Malaysian on the intentions to adopt of the contactless payment. To examine this thesis, several test was done on the data collection from the survey. The result show that perceived ease of use, perceived usefulness and compatibility as the independents of this research have the significant relationship with the intention of adoption of contactless payment. Moreover, with the result of Pearson Correlation test, it can concluded that only one independent variable which is compatibility has strong relationship with the adoption of contactless payment. For the perceived ease of use, perceived usefulness and social influence have moderate relationship while perceived security is weak relationship with the intention to adopt the contactless payment. Furthermore, social influence is the only independent variable showed the negative relationship with the intention to adopt contactless payment. The following independents sample T-test tells the gender of Malaysian will not affect the intention to adopt the contactless payment. In the other hand, the result of one-way ANOVA test showed age will not affect the intention to adopt contactless payment of Malaysian but the income level and education level do. Which can conclude as the education level increase, the intention on adoption of contactless payment in Malaysia will increase. In short, this research has implications for future researcher and business sector. The result of study is also give a clearer way for banking and government sector to boost the amount of users to adopt the contactless payment.

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Appendix A



**Universiti Tunku Abdul Rahman
Faculty of Business and Finance
Bachelor of Business Administration (Hons) Banking and Finance
Determination of contactless payment adoption in Malaysia
Survey Questionnaire**

Dear respondents,

We are undergraduate students of Bachelor of Business Administration (Hons) Banking and Finance from Universiti Tunku Abdul Rahman (UTAR). We are currently doing our final year project and we hope that you can make us a favour to fill up our questionnaire.

This questionnaire consists of two parts. There are Section A which is referring to the respondents' demographic information and Section B which consists of question related to adoption of contactless payment: individual consumer perspective. This study may take about 5-10 minutes.

Contactless payment is defined as “wave & pay” payment device. The examples of the contactless payment method are Touch 'n Go, Visa Paywave, Master Paypass and Samsung pay. Our objective is to discover the factors influence contactless payment diffusion in Malaysia and to study those factors that affect the acceptance of consumers.

Your responds will be kept PRIVATE and CONFIDENTIAL and used solely for academic study and purpose. Thank you for your cooperation.

Thank you.

Your sincerely,

CHWAH CHEE XUAN	15ABB07089
GOH WOEI CHEN	15ABB07413
LIM JIA HUI	15ABB07185
TAI YEN LING	15ABB07642
TAN WIN WIN	15ABB07198

Bachelor of Business Administration (Hons) Banking and Finance
Faculty of Business and Finance
Universiti Tunku Abdul Rahman

Section A: Demographic Information

Please tick (✓) in the box provided.

1. Do you use contactless payment?

Yes

No

2. Race:

Chinese

Malay

Indian

3. Gender:

Male

Female

4. Age:

Below 18 years old

18 – 25 years old

26 – 35 years old

36 – 45 years old

46 – 55 years old

Above 55 years old

5. Marriage status:

Single

Married

Divorced

Widow

6. Income levels (Monthly):

- Below RM1000
- RM1000-RM2000
- RM2000-RM3000
- RM3000-RM4000
- RM4000 and above

7. Highest education level:

- SPM / O-level
- STPM / A-level
- Diploma
- Bachelor's Degree
- Master's Degree
- PhD
- Professional Certificate (Eg: ACCA / CPA / CFA / CIMA)
- Others, Please specific: _____

8. Frequency of using contactless payment in a month.

- 0 times
- 1 – 2 times
- 3 – 4 times
- 5 – 6 times
- 7 times or more

9. Amount spend by using contactless payment in a month.
- Below RM50
 - RM50 – RM100
 - RM100 – RM300
 - RM300 – RM500
 - RM500 and above
10. Which sector you usually use for contactless payment? (Can tick more than one)
- Food and Beverage
 - Daily supplies
 - Clothing
 - Petrol
 - Others: _____
11. What type of contactless payment device that you usually use? (Can tick more than one)
- Contactless card (Eg: Touch 'n Go/ Visa Paywave/ Master Paypass)
 - NFC-enabled mobile (Eg: Samsung pay)
 - Wristband / Gear (Eg: Samsung pay)

Section B: Factors Affect Intention to adopt contactless payment

Please circle for the category that you prefer.

A. Perceived Ease of use

<u>Items</u>		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
PEU1	The use of contactless payment method is clear and understandable.	5	4	3	2	1
PEU2	I believe that contactless payment services would be easy to use.	5	4	3	2	1
PEU3	Learning to use contactless payment services would be easy for me.	5	4	3	2	1
PEU4	Using contactless payment services isn't mentally challenging.	5	4	3	2	1
PEU5	Using contactless payment services is straight forward.	5	4	3	2	1
PEU6	Contactless payment technology is easy to learn.	5	4	3	2	1
PEU7	My interaction with contactless payment procedure is generally clear and understandable.	5	4	3	2	1
PEU8	I generally find contactless payment services to be complicated to use.	5	4	3	2	1

B. Perceived of Usefulness

<u>Items</u>		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
PU1	Using contactless payment makes me save time.	5	4	3	2	1
PU2	There are a high number of available contactless payment service.	5	4	3	2	1
PU3	Using contactless payment makes it easier for me to conduct transactions	5	4	3	2	1
PU4	I would find contactless payment a useful possibility for paying.	5	4	3	2	1
PU5	The range of contactless payment values available is adequate.	5	4	3	2	1

C. Perceived Security

<u>Items</u>		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
PS1	I consider that using a contactless payment method is not secure.	5	4	3	2	1
PS2	The risk of abuse of usage information (e.g., names of business partners, payment amount) is low when using contactless payment method.	5	4	3	2	1
PS3	I am worried that information transferred by using contactless payment may be intercepted by other people.	5	4	3	2	1
PS4	I think that privacy is not guaranteed when using contactless payment.	5	4	3	2	1

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PS5	I am afraid that the confidential of my financial transactions might get lost when using contactless payment.	5	4	3	2	1
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D. Social Influence

<u>Items</u>		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SI 1	People who are important to me think that I should use the contactless payment.	5	4	3	2	1
SI 2	People who influence my behaviour think that I should use the contactless payment.	5	4	3	2	1
SI 3	I will use contactless payment if the service is widely used by people in my community.	5	4	3	2	1
SI 4	Contactless payment enables me to improve my social status.	5	4	3	2	1

E. Compatibility

<u>Items</u>		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
C1	I would appreciate using contactless payment services instead of alternative modes of payment (e.g., pin and pay, cash, and cheque).	5	4	3	2	1
C2	Using a contactless payment fits well with the way I like to purchase products and services.	5	4	3	2	1
C3	I believe that using contactless payment will enhance my lifestyle image.	5	4	3	2	1

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C4	I believe that using contactless payment will be fun.	5	4	3	2	1
C5	Using contactless payment would fit well with the way I like to manage my finances.	5	4	3	2	1
C6	Using contactless payment is completely compatible with my current situation.	5	4	3	2	1

F. Intention to adopt

<u>Items</u>		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
IA 1	During the next six (6) months, I intend to pay for purchase with contactless payment.	5	4	3	2	1
IA 2	I will use contactless payment.	5	4	3	2	1
IA 3	Now I pay for purchase with a contactless payment.	5	4	3	2	1
IA 4	I plan to use contactless payment in the next month.	5	4	3	2	1
IA 5	I will try to use contactless payment in my daily life.	5	4	3	2	1

~ Thank you ~