

THE AWARENESS OF NEAR FIELD COMMUNICATION (NFC)
TECHNOLOGY SECURITY TOWARDS MOBILE WALLET USAGE AMONG
PUBLIC UNIVERSITIES' STUDENTS IN MALAYSIA'S SOUTHERN REGION

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DECLARATION OF ORIGINAL WORK

I declare that this project paper entitled ‘**The Awareness of Near Field Communication (NFC) Technology Security Towards Mobile Wallet Usage Among Public Universities’ Students in Malaysia’s Southern Region**’ is the result of my own research except as cited in the references. The project paper has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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DEDICATION

I would like to dedicate the appreciation to beloved parents and family members who supported me from spiritually and financially, supervisor and panel who guided me throughout the research, friends that assisted me through the journey of research.

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ABSTRACT

Nowadays the increasing mobility of devices provided by mobile communications has become an important feature in the emerging technical world when the mobile phones were introduced and NFC is becoming popular in mobile smart phones, this technology needs two NFC compatible devices placed very near to each other (less than 4cm) in order to communicate. Thus, this research was conducted to examine the level of awareness on Near Field Communication technology (NFC) security towards mobile wallet usage among public Universities' students in Malaysia's Southern Region. In addition, the research is classified to descriptive study to collect data by using quantitative method. The researcher had distributed survey questionnaire to 340 respondents using non-probability sampling method. The data collected was undergo data analysis by using SPSS software. The result was showed that there is a significant relationship between the awareness of NFC technology security; literacy exposure, security issue and consumer trust towards mobile wallet usage among students. Furthermore, literacy exposure has most significant impact on mobile wallet usage. Based on the discussion in research, this research able to explore the deeper insight through conducts further research and gain contribution to consumers.

ABSTRAK

Pada masa kini, peningkatan pergerakan peranti yang disediakan oleh komunikasi mudah alih telah menjadi ciri penting dalam dunia teknikal yang baru muncul apabila telefon bimbit diperkenalkan dan NFC menjadi popular di telefon pintar mudah alih, teknologi ini memerlukan dua peranti serasi NFC diletakkan berdekatan satu sama lain (kurang daripada 4cm) untuk berkomunikasi. Oleh itu, kajian ini dijalankan untuk mengkaji tahap kesedaran mengenai keselamatan teknologi Near Field Communication (NFC) ke arah penggunaan dompet mudah alih di kalangan pelajar universiti di Wilayah Selatan Malaysia. Di samping itu, penyelidikan diklasifikasikan sebagai kajian deskriptif untuk mengumpul data dengan menggunakan kaedah kuantitatif. Penyelidik telah mengagihkan soal selidik tinjauan kepada 340 responden menggunakan kaedah persampelan bukan kebarangkalian. Data yang dikumpul adalah menjalani analisis data dengan menggunakan perisian SPSS. Hasilnya menunjukkan terdapat hubungan yang signifikan antara kesedaran keselamatan teknologi NFC; pendedahan celik, isu keselamatan dan kepercayaan pengguna terhadap penggunaan dompet bergerak di kalangan pelajar. Selain itu, pendedahan literasi mempunyai kesan yang paling ketara ke atas penggunaan dompet mudah alih. Berdasarkan perbincangan dalam penyelidikan, kajian ini dapat meneroka wawasan yang lebih mendalam melalui menjalankan penyelidikan lanjut dan memberi sumbangan kepada pengguna.

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LIST OF ABBREVIATIONS

NFC	Near Field Communication
UTeM	Universiti Teknikal Malaysia Melaka
UiTM	Universiti Teknologi MARA
UTHM	Universiti Tun Hussein Onn Malaysia
UTM	Universiti Teknologi Malaysia
SPSS	Statistical Package for Social Science
ANOVA	Analysis of Variance

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CHAPTER 1

INTRODUCTION

The mobility devices growth dispensed by mobile communications became an important phenomena in the development technology as the mobile phones were introduced to the market. The demands was to setup voice communication as it was provided by Global System for Mobiles (GSM) which has other services such as Short Message Service (SMS), Multimedia Messaging Service (MMS) and even internet access.

With rapid changes in technology development this advanced telecommunication technology has been advanced by introducing the Near Field Communication (NFC) technology the worldwide (Madlymay et al., 2009). In fact, this payment process required the mobile device and the Point of Sale (POS) reader to be in a certain adjacency range to properly operate within 4cm. In order to this platform was working smooth, two devices are needed because the first device acted as the initiator for starting the communication while the other second device is called the target and responds to the initiator's requests.

Furthermore, NFC enabled on mobile wallet validated users to secure their personal information and financial records like cards details and it tends to be handier on their smart phone. It assisted users to view the cards and selected card type for a transaction along with the payment method.

There were advantages can be gained from NFC on mobile wallet including location-free access (Jara et al., 2009), an easy alternative to cash payments and timely contact with their financial resources as it was convenience between an advancement, experiences, values and need of consumers. The NFC enabled mobile payment easily integrated into consumers' expectations as to ensure the mobile payment method to be more flexible towards these system. Thus, mobile payment methods are found to be most attractive for small payments in purchasing at the counter.

1.1 Background of Study

In this study, Near Field Communication (NFC) is defined as a short-range wireless communication technology that enable communication between two devices to each other within 4 cm. NFC devices had a magnificence of security because there was no sniffing communications as the role itself for avoiding from all the security threats. In recent years, NFC technology is being increasingly considered as a solution for contactless mobile payment services (Bezhovski, 2016).

Mobile wallet is also referred by other names like mobile money transfer and mobile payment as it represented a payment services operated under financial regulation via a mobile device (Jain & Dahiya, 2015). In other words, deploying the facility of a mobile device with authorized support facility and conformance to legal policy in which mobile money transfer refers to any method of monetary exchange. An individual may not access the ongoing ways of payments like cash, cheque or debit/

credit cards with this service payment. Rather, step on to speedy digital method of transactions through mobile phone through its associated applications. Hence, the presence of wallet money was gaining significance importance day by day.

However, this mobile wallet platform can be beneficial as it provided by the latest cellular technology in which it included ease access to payment services anywhere and the likelihood to avoid making queues and cash payments (Doan, 2014). For all the benefits are raised from this platform, it can be developed towards pricing of the payment system, comprehended security risks, complexity with huge payments and the immaturity of the mobile payments market.

This can be considered as a big revolution in the digital world in which it will replaced the traditional wallets with multiple credit and debit cards (Jara et. al, 2010). In other words, the mobile phone became a preference of ecommerce and other online financial activities for everyone especially students. The usage of mobile devices for online payments using mobile wallets have proved their potentials to transform transpire economies.

However, the concept of the mobile wallet or payment through mobile still poor in developing economies (Sharma et al., 2018). This is because mobile wallet are in its development and maturing stage as their exposure and accessibility show large possibilities for the consumer especially students group. So, it can be said that the future of mobile payments can be secured by using the latest technology in order to nurture the awareness and raise trust from consumer to use NFC enabled on mobile wallet. With the rapid development of mobile technology and an increasing number of mobile phone users, the mobile wallet has been acknowledged as having growth demands among people and mobile commerce industry (Faulds & Raju, 2018). It can be seen that this applications industry captures to develop and build solid market as it also provide for secure, convenient, cost saving and efficient money transactions at the counter.

1.2 Problem Statement

With the changes of technology along to the Industry Revolution 4.0, the world was changing fast at just one click payments can be completed (Clements & Boyle, 2018). In this era, a smartphone became the platform for maintaining the mobile wallet and minimizing time to carry tangible cash as every person owns the smartphone for the sake of personal and business purpose.

First and foremost, the application of NFC payment service has been very deficient before. According to Kim et al., (2017) suggests that although the technology was available in the market at early 2010 but it not widely accepted either by the end users or mobile commerce industry. It can be revealed that little research has been done on this aspect of mobile payment system because the consumers are still lacking exposure and low adoption rates towards this platform. The consumers have to be exposed to this technology and accessibility to this applications must be provided by many places.

The European Central Bank (ECB) also highlighted that NFC-based mobile payments as one of the most promising payment medium for potential consumers Fuentes & Svngstedt (2017), NFC payments are expected to grow steadily and rapidly as more consumers adopt the technology. The references concerns that 10.4% of digital consumers (24–55 years old Spaniards who enjoyed their online purchases or contactless payments in-store during the past 6 months) use smartphones to pay in-store through the NFC technology as it has proved that 4.2% growth compared to previous year.

Both consumers and merchant's provider have also exposed consumers to new risks regarding privacy and security issues whenever mobile payment systems have brought new sights for merchants and customers. Moreover, a thriving future of mobile wallet market, mobile phones manufacturers, telecommunication companies and

payment industry need to work together so that a platform can be developed as it ensured the most secure system for online payment transactions. However, it is believed that mobile wallet systems have the prospective to tackle all of the bigger security and privacy concerns related to NFC enabled mobile payment (Bezhovski, 2016).

The biggest challenge on why consumer are still not adapt to mobile wallet platform is security in which it has paramount significance when it comes to financial transactions using mobile devices (Al Chalabi et al., 2015). Protection of digital currency and its secure transfer are the major security challenges in digital mobile wallet. A combination of different encryption techniques and close proximity transfer wireless technology are used to address these security challenges. Despite the fact that mobile wallet is a growing field in the payment services, its widespread use in future are likely depends on the security and authentication stability of various electronic payment systems. Thus, this research focuses on the awareness of NFC technology security towards mobile wallet usage among public Universities' students.

1.3 Research Questions

This research has three objectives to be achieved, namely:

- i. What is the level of awareness of NFC technology security towards mobile wallet usage among students?
- ii. What are the differences between the awareness of NFC technology security and mobile wallet usage among students based on demographic factors?
- iii. What is the relationship between the awareness of NFC technology security and mobile wallet usage among students?

1.4 Research Objectives

This research explored the following key questions:

- i. To identify the level of awareness of NFC technology security towards mobile wallet usage among students
- ii. To identify the differences between the awareness of NFC technology security and mobile wallet usage among students based on demographic factors
- iii. To examine relationship between the awareness of NFC technology security and mobile wallet usage among students

1.5 Scope & Limitation of Research

For the research, researcher would like to identify the awareness on NFC technology security as independent variable and mobile wallet usage among students as dependent variable. The mobile wallet usage will be investigated among students in Malaysia's Southern Region whether the awareness on NFC technology security technology could be measured in the research. The mobile wallet usage among students will be focused in the result.

The restriction and limitations faced during conducting this research is the location is conducted in Malaysia's Southern Region in which covers public Universities; Universiti Teknikal Malaysia Melaka (UTeM), Universiti Tun Hussien Onn Malaysia (UTHM), Universiti Teknologi Malaysia (UTM) and Universiti Teknologi Mara (UiTM) in which not every Universities took part on this research. In addition, the researcher only able to distribute the questionnaire to target respondents based on selected geographic areas due to the limited time. Hence, the research methodology of the study was through the quantitative research to complete this study, Mostly of the respondents were answered the questionnaires through Google Form.

Besides, the researcher assuming all the respondents answers the questionnaire honestly. Lastly, the respondents, may not have an adequate knowledge towards NFC technology security influences on mobile wallet usage among students.

1.6 Summary

This chapter enclosed all the essential elements such as background of study, problem statement, research questions, research objectives and scope and limitations of study. The scope of study is discussed in the background of study. Whereas, problem statements touched the issues related and what drives the researcher to conduct the research which including the literacy exposure, security issue and consumer trust. The objectives highlighted is purposely to answer all of the questions derived from problem statement as to achieve the aim of this study. The next chapter will help to strengthen the explanation and theories referred throughout focuses on study findings based on articles.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter covered on advanced and detailed descriptions about Near Field Communication (NFC) technology towards mobile wallet usage among students. The independent variables (IV) and dependent variables (DV) are explained as well in this chapter. The IV and DV could be listed as respectively as following: the awareness of NFC technology security in which literacy exposure, security issue, consumer trust and mobile wallet usage among students. All of these independent variables will be tested and studied to see the relationship between the awareness of NFC technology security and mobile wallet usage among students. All of the conclusion about this chapter will be discussed at the end of this section.

2.2 Near Field Communication (NFC) Technology

In this era, Near Field Communication (NFC) mobile payment has been emanated since everyone tend to prefer smart digital wallet to have a convenience purchase at the counter. In the previous years, purchasing the necessary goods in physical store has been associated via card and cash payments. By having an access towards NFC technology approach, everyone can make a payment for purchasing in stores instead of using a conventional payment ways. It can be revealed that payment nowadays is far advanced with the aid of NFC technology enabled mobile devices (Bakula, Pelgrims & Puers, 2015). However, wireless technology gave a big impact towards the numbers of consumer accessed to mobile devices as it has been faster developed by mobile commerce. This is because some retailers might reshaping the mobile payment method to serve a better experience for their customers at the particular counter.

The NFC based mobile payment is still in immaturity phase, the low adaption of NFC enabled mobile devices require a faster purchasing products as to ensure all the personal information at secure phase by scanning to Point of Sale (PoS) devices at the counter (Zhao & Muftic, 2011). As an instance, payment method has allowed consumers to enjoy the faster transaction and user friendly medium as they wants to banish the cash payment.

However, the NFC mobile payment was not exposure despite its potential as documented (Pal, Vanijja & Paspatorn, 2015). In order that, the customers were deny to adapt NFC mobile payment method to make a purchase while the companies would like to have a better understanding towards the opportunity of implementing NFC mobile wallet. Hence, although NFC mobile payment was emerging as a new trend of cashless method as well, there were very little attention has been given on how to encourage and diffuse towards new phenomenon of NFC mobile payment.