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A STUDY ON FACTORS INFLUENCING USER'S BEHAVIOUR TOWARDS  
SMARTPHONE SECURITY IN MELAKA

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This report is submitted in fulfilment of the requirement for the Bachelor of  
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## DECLARATION

„I declare that this report is my own work except the summary and excerpts of everything I have to explain the source“

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## DEDICATION

I would like to dedicate the success of the of this project report especially to my parents. They endless support in terms of time and money that they have given for me to further my studies would not be enough to pay back by just submitted this report. Therefore, I am proud and honoured to have them as my parents. Second dedication is to all my siblings that has given me a lot of spiritual support in this study. Last but not least, to my supervisor Dr. Yusri bin Arshad, my panel Mr. Hasaloan Haery Ian Pieter and also my friends.

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## ABSTRACT

Due to the rapidly growing smartphone growth and service, users are faced with problems such as safety and security. As smartphone now have advanced features and ease of use, sensitive data including contacts, email and photos are now can be saved in the smartphone. This can make our sensitive data exposed and attract hacker for hack our sensitive information. This research examines the factor influence security behaviours of smartphone user. Its aims to identify the factors that influences user behaviours of smartphone security, to investigate the relationships between factors that influence user behaviours towards smartphone security and to define the most influencing factor of user behaviours towards smartphone security. The theoretical framework has been developing to meet this research objective. The method used in this study is using questionnaires. The questionnaires are distributed around Melaka city to targeted respondents to collect the quantitative data for analysis. After that, the data that get from the respondents will be analysed using the SPSS software to get the accurate data. Lastly the discussion will be conduct from the analysis and then the recommendation and conclusion will be built to complete this research.

**Keywords:** Smartphone, TTAT, user behaviours, mobile device threats.

## ABSTRAK

*Oleh kerana pertumbuhan dan perkhidmatan telefon pintar yang pesat berkembang, pengguna juga akan menghadapi masalah seperti keselamatan dan keselamatan. Memandangkan telefon pintar kini mempunyai ciri-ciri canggih dan kemudahan penggunaan, data sensitif termasuk kenalan, e-mel dan foto kini boleh disimpan di telefon pintar. Ini boleh menjadikan data sensitif mereka terdedah dan menarik penggodam untuk menggodam maklumat sensitif kami. Kajian ini mengkaji faktor mempengaruhi tingkah laku keselamatan pengguna telefon pintar. Tujuan penyelidikan ini adalah untuk mengenal pasti faktor-faktor yang mempengaruhi tingkah laku pengguna keselamatan telefon pintar, untuk mengkaji hubungan antara faktor-faktor yang mempengaruhi tingkah laku pengguna terhadap keselamatan telefon pintar dan untuk menentukan faktor yang paling mempengaruhi tingkah laku pengguna terhadap keselamatan telefon pintar. Rangka teoretis telah dibuat untuk memenuhi objektif penyelidikan ini. Kaedah yang akan digunakan dalam kajian ini adalah dengan menggunakan soal selidik. Borang soal selidik diedarkan di sekitar bandar Melaka kepada responden untuk tujuan pengumpulan data kuantitatif untuk dianalisis di dalam kajian ini. Selepas itu, data yang diperoleh daripada responden akan dianalisis dengan menggunakan perisian SPSS untuk mendapatkan data yang tepat. Akhir sekali, perbincangan akan dijalankan dari analisis dan kemudian cadangan dan kesimpulan akan dibina untuk menyelesaikan penyelidikan ini.*

**Kata kunci:** *Telefon pintar, TTAT, tingkah laku pengguna, ancaman peranti mudah alih.*

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## LIST OF ABBREVIATIONS

<b>ABBREVIATION</b>	<b>MEANING</b>
H <sub>0</sub>	Null hypothesis
TAM	Technology Acceptance Model
TPB	Theory Planned Behaviours
TTAT	Technology Threats Avoidance Theory
PSUS	Perceived Susceptibility
PSEV	Perceived Severity
PE	Perceived Effectiveness
SE	Self-efficacy
SG	Safeguard Cost
SN	Subjective Norms
B	Behavioural

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

This chapter has several different parts. The first part of this research is the background of the research. Background of the study is the general overview of the research study as well as state the idea of this research study. Second part of the study is problem statement to give brief description for the research topic that need to be solved or improve by the researcher. Next is research question and research objective. Research question is related to research objective in which research objective is the answer for the research questions. Scope of the research explains where the research is conduct. After the scope of the research, this chapter also explain about the limitation and key assumption for this research, important of the study and lastly summary for this chapter.



## 1.2 Background of the study

Nowadays, smartphones are a gadget used almost by everyone. Furthermore, the technology in the smartphone is increasingly sophisticated. Smartphone now is like a computer that we can use with a mobile operating system and integrated mobile broadband cellular network connection such as internet, voice and others. Now, smartphones have a more complex operating system and applications that can provide wider range of services to consumers in line with the rapidly expanding technology (Tsavli *et al.*, 2015). Besides that, its function is also different from the traditional mobile phone where it offers a variety of simplified services such as email service, video recording, global positioning system (GPS) and others application. Due to the rapidly growing smartphone growth and service, users are also faced with problems such as safety and security. As smartphone now have advanced features and ease of use, sensitive data including contacts, email and photos are now can be saved in the smartphone (Alsaleh, Alomar and Alarifi, 2017). This can make our sensitive data exposed and attract hacker for hack our sensitive information.

Mobile device threats are a viruses and spyware that infect our smartphone. There are many of security threats can affect the smartphone. According to (Farhan *et al.*, 2016) there are many malware, viruses and Trojan has been discovered based on the APIs (application program interface) and its was look like a safe software but there are some reliable applications such as facebook, gmail and other can collect user information with using GPS system without user knowledge. Other than that, smartphone operating system can divide into many categories such as Microsoft Window Phones, iOS, Android, and others. Among all of the smartphone operating system, Android is the largest used because of the best and better performance compare to the other operating system. Even though each of the smartphone has their own operating system, its still can be target for attack based on vulnerabilities in software applications.

Now, smartphone user is exposed to many threats by using their smartphone because usually there are three targets for attackers such as data, identity and availability (Farhan, Ali, Kamran, Javaid, & Zhang, 2016). Firstly is data, smartphone can saved many sensitive data such as bank card number, private information and authentication information. Second is identity, as the smartphone are highly customizable the hacker would like to steal owner identity of the smartphone the commit crime or something bad. Lastly is the availability, availability is the hacker attacking a smartphone and make owner can limit access control and the owner can't use it.

In this study researcher, it is to show the factor influence security behaviour of smartphone users. It's to examine the factor that relate to consumers behaviours and awareness towards security. In this research, it seek to understand the factor influence of security behaviours toward multiple key of smartphone threats such as attack on multimedia messaging service (mms), wifi, bluetooth short message service (text messaging), and others.

### **1.3 Problem Statement**

As we know, smartphone now is basic need to everyone. According to (Alsaleh, Alomar and Alarifi, 2017) with advanced feature and ease of use smartphone now are simply small computers. Inside the smartphone there are much important information for example photos, email, contacts and others. This situation attracts the hacker to hack the information for their bad use. The sophistication of the functionality in the smartphone makes it easy for users to get things done but it is also dangerous to them because it can attract hacker to hack their privacy data such example downloading malicious application from uncontrolled app market place (Alsaleh, Alomar and Alarifi, 2017). Other than that, (Felt et al.2011) stated that in the last three years the virus and malware for mobile device like smartphone has increased and have make a lot of damages and problems with battery power such as

lacking of battery power, expose of user privacy, theft of the information and loss of financial (He, 2013).

Survey that has been done by previous study showed that 75.8% user's like save their personal data on their mobile devices and 35.8 % like to store their business data (Mylonas, et al. 2013). Now, if the user is unable to secure their mobile devices, they are facing a serious problem because their private data is at risk (Harris et al. 2014). Other than that, the security if the user downloads application from third party or unofficial channel, it can harm the mobile device (Mylonas et al. 2013). Research that have been done from previous study shown that 31 % of phone users have reported receiving short messages with embedded malicious links from strangers and lead to danger (Norton, 2012) and 82% of malicious applications can collect send or receiving short messaged (Websence, 2013).

As we all know all the smartphone have many threat that can make smartphone user lost their data, identity and availability (Wikipedia 2017). As smartphone become more sophisticated from year to year too many application that created to ease of user use and user can save more important data in the smartphone because user bring their smartphone everywhere so easy if their save information inside the smartphone such as password for their bank card and others. It's important to the smartphone user to take precautions step and become more careful to make sure their secret information safe from been hacked by hacker. Currently due to the lack of the user awareness among smartphone users, the consumer need to protect their personal information, account and other private information inside smartphone from being hacked by irresponsible person (Farhan *et al.*, 2016) . Therefore, security behaviours must be applied to enhance the security awareness among smartphone users. So that, they can protect their data from harmful and everyone is aware about the security.

#### **1.4 Research Questions.**

The research question is the first active step for this research project and this research will cover the following question:

1. What are the factors that influence user behaviours towards smartphone security?
2. What are the relationships between the factors influence user behaviours towards smartphone security?
3. What is the most influence factor of user behaviours towards smartphone security in Melaka?

#### **1.5 Research Objectives.**

The objectives of the study had been stated as below:

1. To identify the factors that influences user behaviours of smartphone security.
2. To investigate the relationships between factors that influence user behaviours towards smartphone security.
3. To define the most influencing factor of user behaviours towards smartphone security.

### **1.6 Scope of the study.**

Melaka has been choosing as my research location. There are many ways to protect smartphone from security threat. The focus of this study is to identify about the factor influence security behaviour of smartphone user. The factors that contribute are the susceptibility, severity, self-efficacy, effectiveness, cost and subjective norms. This research will collect data using questionnaires survey. Based on the department of statistic Malaysia data, the population in Melaka city is 389 900 people range of age around (15 years old – 65 years old). The questionnaires survey will be distributed around Melaka city. The target respondent is smartphone users in Melaka. There are 384 respondents was been target to answer the questionnaires.

### **1.7 Limitation and key assumption of the study.**

In this study, there are several limitations that can't be controlled by researcher. Firstly, the number of respondent of this research is narrow. Next is the time constraint where there are not enough time to do a research and this is first time researcher doing research. Lastly is respondent rate, not all the respondent will fully answer the questionnaires survey and lead to limited data because maybe respondent do not give enough cooperation. Assumption of this study is the researches will assume the respondents will provide honest answer when answer a questionnaire. Next is the researches assumed the respondent understood about the topic of the study and assume respondent willing to be part of respondent for primary data collection. Lastly is the researcher assumes that the respondents has more experience in handling with matter related to the factor influence security behaviours towards smartphone users.

### **1.8 Importance of the study (Significance / Contribution)**

The purpose of this study is to identify the factor influence security behaviours among smartphone users. Nowadays, too many smartphone users don't aware about mobile device security threats in the smartphone such as data theft, data leakage and others. This threat can give negative impact to the smartphone user. The importance of this research is to find how far smartphone user knows about mobile device security threat and how to avoid it. The researcher needs to relate the research problem which is about the serious concern about the security in the use of smartphone.

### 1.9 Structure of Proposal

<b>Chapter 1</b>	In this chapter, it is about the introduction of what the researcher wants to study. It is including background of the project, problem statement, research question, research objective, scope, limitation and key assumption, and important of the study.
<b>Chapter 2</b>	This chapter will explained the literature review according the previous research and explain the theoretical framework that relates with research objectives. The conceptual framework has been built to fit this research.
<b>Chapter 3</b>	From this chapter, the researcher will explain about the method that will use in this research. It also explains where the research is conducted how much the questionnaires survey will be distributed to respondents to get the data.
<b>Chapter 4</b>	In this chapter, it will elaborate on the various statistical tests and interpretation of the results of the analysis using SPSS. This chapter shows the results that get from the distribution questionnaires.
<b>Chapter 5</b>	In this chapter, researcher was discussed about the summary and recommendations for this study based on the results the researcher get and that have been presented in this previous chapter.

### **1.10 Summary**

This chapter is about the fully description about the background of the study of what researches want to study. It also discuss about the basic concepts of the study, problem statement, the research objectives and research questions. There also explain about the scope limitation and significant of the study