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THE TECHNOLOGY FACTORS THAT INFLUENCE THE ADOPTION OF  
TECHNOLOGY OF SMALL AND MEDIUM ENTERPRISES IN MELAKA

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## DECLARATION

“I declare that thesis entitle The Technology Factors That Influence the Adoption of  
Technology of Small and Medium Enterprise (SME) In Melaka

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## **DEDICATION**

I would like to dedicate my dissertation work to my supervisor, Dr. Nusaibah binti Mansor who has provided me advices and leaded me to the right path in the process of this study and my family, friends, and relatives for giving their unlimited support, help, encouragement, and motivation throughout the completion of this research project. Besides, this research paper is lovingly and sincerely dedicated to my lovely parent, Encik Ahmad Kamal Ariffin and Pn. Azilah binti Mohd Uyop who keep on supporting and give constant source of inspiration in my studies. I am honored to have both of them. Next, my deepest gratitude to my friends Faruq Hakimi and Khusul Khotimah who always give positive support and assist me during the process of making this thesis happens. To all my family and friends thank you for your understanding and positive support for me to complete this project.

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## ABSTRACT

The adoptions of technology of small and medium enterprise give large impact to the entrepreneur's businesses as well as achieve the government aspiration. The government plans such as Transformation National (TN50), Industrial Revolution 4.0 and Digital Free Trade Zone (DFTZ) also play the main role to the entrepreneurs in adopting the technology. The government are providing several platforms which allow the entrepreneurs to build the entrepreneurial skills and knowledge on adopting the technologies in their businesses. Besides, the programmes also will provide the requirement and resources needed for the entrepreneurs to go digital as well as adopting the technology. However, there are few technology factors that may influence the adoption of technology of small and medium enterprises in Melaka. The technology factors are cost, e-commerce technology, infrastructure, reliability, security and technology availability. These factors tested on small and medium enterprises (SMEs) in developing country such as Malaysia. This is because, Malaysia is moving towards the digital economy which want to boost the connectivity activities of people, organisations businesses and machine that results from the internet and mobile technology and internet of things (IoT). This research uses a quantitative method to identifying the technology factors that influence the adoption of technology of small and medium enterprises (SMEs) in Melaka. There are two approaches which are descriptive and explanatory approach to test the significant relationship between the technology factors and the adoption of technology of small and medium enterprises (SMEs) in Melaka.

**Keywords:** *Small and medium enterprises (SMEs), Technology Factors, Adoption of technology in small and medium enterprises (SMEs)*

## ABSTRAK

Penggunaan teknologi dalam perusahaan kecil dan sederhana (PKS) memberi impak yang besar kepada bisnes serta dapat mencapai aspirasi kerajaan. Selain itu, terdapat pelbagai perancangan dari kerajaan sebagai contoh Transformasi Nasional (TN50), Industri Revolusi 4.0 dan *Digital Free Trade Zone (DFTZ)* yang memberi peranan yang penting kepada usahawan dalam menggunakan teknologi di dalam bisnes mereka. Kerajaan juga turut menyediakan beberapa platform sebagai peluang untuk usahawan membentuk dan meningkatkan kemahiran dan ilmu dalam penggunaan teknologi ke dalam bisnes. Tambahan pula, program yang dijalankan juga dapat menyediakan segala keperluan dan sumber yang diperlukan untuk menggunakan teknologi di dalam bisnes mereka. Bagaimanapun, masih juga terdapat beberapa faktor teknologi dalam mempengaruhi penerimaan teknologi di dalam bisnes. Di antara faktor teknologi dalam kajian ini adalah kos, teknologi e-dagang, infrastruktur, kebolehpercayaan, keselamatan, dan kesediaan teknologi. Semua faktor ini akan diuji kepada perusahaan kecil dan sederhana (PKS) dalam negara yang sedang membangun. Ini kerana, negara Malaysia sedang menuju ke arah ekonomi digital dimana segala hubungan aktiviti diantara masyarakat, bisnes, organisasi dan teknologi sedang pesat membangun dengan adanya internet, teknologi dari telefon pintar dan *Internet of Things (IoT)*. Kajian ini menggunakan cara kuantitatif untuk mengenalpasti faktor teknologi dalam perusahaan kecil dan sederhana (PKS) di Melaka. Terdapat dua pendekatan dalam kajian ini antaranya adalah *descriptive* dan *explanatory* untuk menguji hubungan diantara faktor teknologi dengan penggunaan teknologi di dalam perusahaan kecil dan sederhana di Melaka.

**Kata Kunci:** *Perusahaan Kecil dan Sederhana, Faktor Teknologi dan penggunaan teknologi di dalam perusahaan kecil dan sederhana (PKS).*

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of Study

The digital transformation changed the way business and delivery models towards click and mortar due to the industrial revolution 4.0, National Transformation 50 (TN50) and 11<sup>th</sup> Malaysia Plan. The rapid changes of technologies give large impact to the digital entrepreneurs in their product and services. Besides, it also changes the operation and working transaction and creates competitive advantage for the business. The purpose of the study wants to identify the technology factors that influence the adoption of technology in Malaysia. As the government pursues the small medium enterprises (SMEs) to go online business for the business expansions but there are boundaries from the technology that will give impact and influence the entrepreneur to adopt the technology.

The changes of technologies had changed the way entrepreneurs generate profits every day. However, there are still few entrepreneurs that using brick and mortar even though the economic are moving towards the digital transaction. The evolution of business from brick and mortar to click and mortar is due to the development of internet, infrastructure and technologies. These lead to the growth of e-commerce value in using all the technologies for the business propose. (Ueasangkomsate, 2015).

The internet and e-commerce system can assist the small and medium enterprise (SMEs) to have the flow of the information. (Bakri et al, 2014). The adoption of e-commerce systems can reduce the transaction cost and it can be used to boost the productivity and performance of the business. (Kim et al, 2006). About 97% of businesses in Malaysia are small and medium enterprise (SMEs) which it contributes almost 50% of the total employment in Malaysia and act as the drivers of economic growth. (Leadereconomics.com, 2016). Based on Companies Commission of Malaysia (SSM), there are over 53,285 online business had registered as of 10 July 2017. (The Sun Daily, 2017). These showed that, everyone can access and develop their business through online business. There are lots of social media interface that can assist people in developing their own online business through different medium such as website, Facebook, Instagram and Twitter.

The Multimedia Development Corporation (MDeC) had established *E-usahawan* programme in 2015. The programme wants to expose and inspired the young digital and micro entrepreneur in small and medium enterprise (SME) to gain more revenue via online. MDeC wants to enforce the knowledge and value of digital entrepreneurship among the micro-entrepreneurs who are concern to delve into business. They will learn entrepreneurship course in selected institutions and in a period of time. The programme ruminated a study of internet and e-business adoption of small and medium enterprises (SMEs) that MDeC commissioned. The survey found that 65% of SMEs are not using an internet as a medium for online business and 68% of them do not have website. (E-Usahawan, 2015).

By 2020, Digital Malaysia wants to create an ecosystem that pushes the pervasive use of digital technology. It is a national programme to encourage the country towards a developed digital economy. This programme will include global network in order to enhance the Gross National Income (GNI) and increase the productivity and improve standards of living. Digital technology is the main focus in organisation to heighten the quality of information serves to consumers. (Foroudi et al, 2016). In addition, the digital technology can create a positive responds to customer needs, improve business and boost the efficiency of a business by cutting down the cost.

## 1.2 Problem Statements

Now, the industry revolution 4.0 enforce the entrepreneurs to go online to develop and expand the market and gain more networks based on trading activities. The revolution allows the small medium enterprise to go global through targeted assistance, automation, digitalisation and robotisation. The revolution induces the communities with the power of ICT and broadband. There are about 77% of microenterprise in Malaysia and deficiency of automation.(Nainy, 2017). The industry revolution 4.0 is forcing the microenterprise from rural area to be part of digital economy. There are lots of programmes such as, Go Global Malaysia programmes, You Can Duit by MDEC and POS Malaysia which provides awareness and outreach programme on SME enabler programme and e-Business Centre. These will assist the small and medium enterprise (SMEs) to develop the business capacities and networks partners, elevate the exports and to be globally competitive companies.

In addition, the new initiative from the government and implemented by Malaysia Digital Economy Corporation (MDEC) is Digital Free Trade Zone (DFTZ). DFTZ is a platform where the small and medium enterprises (SMEs) in Malaysia can boost and develop their market globally. This will create an advantage and opportunity to the entrepreneurs to gain market from all over the world. Unfortunately, there are about 1,900 small and medium enterprises (SMEs) took the opportunity to use the medium as their development of the business global after the eight months DFTZ launched. (New Straits Times, 2017)

According to Malaysia Communication and Multimedia Commission (MCMC), there are only 18.3% of Malaysian that use the internet in generating their income and develop their business well. The result got from Internet User Survey, 2017 conducted by MCMC. This is due to the low confidence, skills and interest towards the technology. (The Sun Daily, 2017). There are about 33% of registered small and medium enterprises that contributed to the gross domestic product (GDP) and adopted the technology and encourage their efficiency, productivity and competitiveness. Even though the potential returns of technology will be high to the



business, the entrepreneur still lack of resources, financial and skilled human resources to adopt the technology.( Gobakhloo et al, 2012)

The Sun Daily, 12<sup>th</sup> July 2017 reported that, The Malaysia retail Chain Association (MRCA) want the retail industry to go online which it in line with government aspirations in providing better competition and opportunities. Besides, the president of MRCA, Datuk Garry Chua said, the adoption of online system in retail industry is relatively low but the strategies were planned. Since the government brings in Alibaba, it creates the opportunity for the retailer and small and medium enterprise to the maximum.

Last few months, Malaysia had been attacked by The Wannacry ransomware which it was infected in over 150 countries. It has changed the language of the computers and forbid the user to access it. This also will result to loss of confidential information and might affect the company reputations. The government advice all the internet users to update the antivirus and not to simply click on email that they do not even know where the solid source from. (The Star Online, 2017). The advanced technology makes the human life become easier but there are hidden risks that the consumers and the entrepreneurs might have to face in every single day.

The uses of ICT in small and medium enterprises will be limited because of the limited knowledge of technology, trammel awareness and lack of internet penetration in business. Even though, the small and medium enterprises (SMEs) are engaging all the business activities and exchanging the information with their trading partners. (Bakri et al, 2014). In addition, the Malaysian community are still abrasively accepts new technology without any strong prove or positive impact from the developed or developing countries on successful of adoption of technology. ( Che Mohd Zulkifly, 2014)

### **1.3 Research Questions**

- i. What are the relationships between the technology factors that influence the adoption of technology towards the small and medium enterprise in Melaka?
- ii. What are the technology factors will influence the adoption of the small and medium enterprise (SMEs) in Melaka ?
- iii. Which technology factors that influences the most in adopting technology of small and medium enterprise (SMEs) in Melaka?

### **1.4 Research Objective**

- i. To identify the relationship between technology factors that influence the adoption of technology towards the small and medium enterprise (SME) in Melaka
- ii. To analyse the technology factors will influence the adoption of technology of the small and medium enterprise (SMEs).
- iii. To analyse which technology factors influence the most in adopting technology of small and medium enterprise (SME) in Melaka.

### **1.5 Scope of Study**

The scope of study for this research is focusing on the technology factors that influence the adoption of technology towards the small and medium enterprise. There is still low level of adoption technology towards the small and medium enterprise. This study involves the small and medium enterprise in Melaka that use brick and mortar and click and mortar.

## 1.6 Summary

This chapter discussed the problem statements that involve the digital revolution change the way small and medium enterprises developing their business digitally. This study also includes the research questions and research objectives in identifying and measures on how far the technology factors influence the adoption of technology of small and medium enterprise in Melaka. The adoption of technology will enhance the improvement on the efficiency, productivity and competitiveness of the operation in business. However, there are still few barriers on level of knowledges of technology towards the business and less penetration of internet in business. This may be the major technology factors that influence the small and medium enterprise in adopting the technology in their business.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The previous chapter explains the problem statement on the adoption of technology in small and medium enterprises (SMEs) in developing countries. The research questions and research objective was designed to identify and solve the problems. This chapter review on the literature on the technology factors that influence the adoption of technology of small and medium enterprises (SMEs) in developing countries.

The chapter begins with the brief on digitalize revolution on technology in developing countries especially on industrial revolution 4.0 about digital economy, e-commerce adoption, and technology limitation to e-commerce adoption. Next, the variables are discussed of technology factors available in developing countries. Through this research, the technology factors are explained on the cost, e-commerce technology, infrastructure, reliability, security and technology availability.

## 2.2 Digital Economy

According to Rizal Nainy, the deputy chief executive officer of SME Corp Malaysia, 2017, the industry revolution 4.0 Malaysia had mostly change the business and delivery models into digital. All the transaction, storage and operational had become digitalise. The adoption of new technology such as cloud computing, robots, internet of things (IoT), artificial intelligent (AI) and virtual stores will help in increase the productivity and effectiveness in their business. Besides, it also boosts the trading between emerging markets and increase the worker's mobility and technology advances.

The government wants the small medium enterprise (SMEs) to expand their business through digital which it will give them gaining more revenue rather than use the traditional way. Through online, the entrepreneur may gain more customers and build the relationship and trust among the consumer, supplier or competitors.

The technologies change due to the demand from consumer and it also affects the entrepreneurs in providing the best product and services to them. The changes also will furnish several challenges to the entrepreneur based on the technology risks. (Ali et al, 2017) The precedence of all business is securing the sensitive data from the hackers. The threats can give a negative impact to the business. (Entrepreneurs, 2017).

### **2.3 E-commerce Adoption**

The development of technology allows the changes in payment transactions. Besides, it will enforce the entrepreneurs to adopt the technology on the online payment transaction. The internet also becomes an active trade medium in recent years and it also encourages small and medium to involve in digital economy which it provide lower cost of business operation. (Shemi, 2012).The statistics conducted by SME Corp. on the usage of devices is about 98.3% in 2016.Besides, there is about 90.1% number of respondents using internet which it is 33.3% increase from year 2014. About, 78.2 % percentage increases of usage of social media in promoting products and services. (SME Annual Report, 2016).The new competitive era is based on the electronic environment. The small and medium enterprises (SMEs) need to adopt the technologies and have started to market their product in the internet. E-commerce allows the competitive advantage in domestic and global markets. (Sin et all, 2016)

## **2.4 Technology Limitation to E-Commerce Adoption**

The conceptual framework wants to identify which factors are the most influence on the e-commerce adoption and use by the small medium business. The recent study was implemented in the developed country but in the rural area of Kentucky, USA. The researcher found that there was lacking in physical infrastructure for the small medium enterprise (SMEs).

This study is focusing on the conceptual framework on technology factors that influence the adoption technology in small medium enterprise to go digital in Malaysia. This is because, the government enforcing the small and medium enterprise (SMEs) to do online business due to the industry revolution 4.0. Besides, most of the transactions in business are using digital to ease the consumer and reduce time. The digital transformation is importance in Malaysia due to the Asia region that is fast in digital innovation. Besides, there are about 49.7% of internets users are estimated approximately and Asia is one of the largest regional e-commerce markets. (Internet Worlds Stats, 2017). These enforce all the business to develop their business transaction to digital and put Malaysia at the same level of other Asia countries.

The conceptual framework was adopted by Wymer and Regan. There are 26 factors that influencing e-commerce adoption and use by small and medium business. They had discussed on environmental factors, knowledge factors, organisational factors and technology factors. This framework is adopted to test the technology factors in developing country such as Malaysia. The technology factors will look deeper on the understanding of adoption technology of SME in Melaka. This framework had done by Wymer and Regan at developed country in Kentucky, USA.

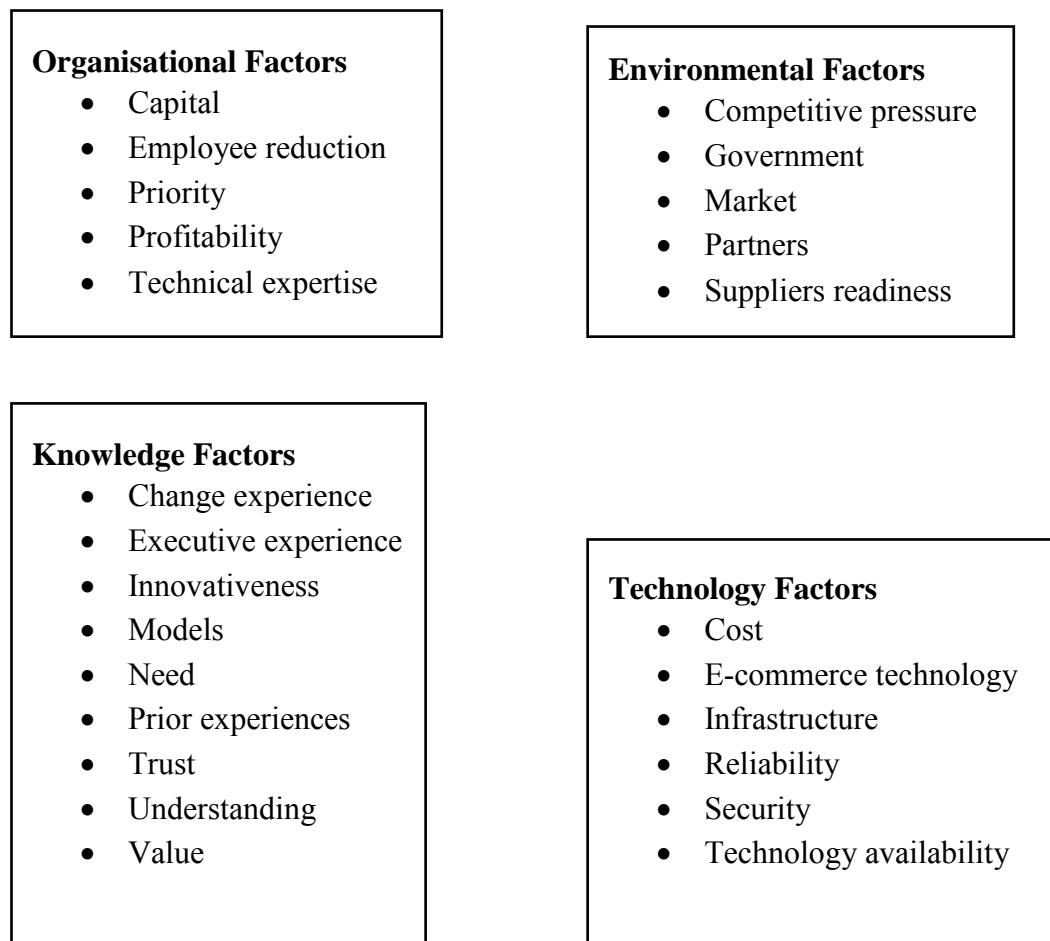


Figure 2.4: Factors Influencing E-commerce Adoption and Use by Small and Medium Businesses

(Source: Wymer and Regan, 2005)