IMPACT OF FACTORS INFLUENCING USE OF E-COMMERCE ON PERFORMANCE OF MALAYSIAN SMALL AND MEDIUM ENTERPRISE

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DOCTOR OF BUSINESS ADMINISTRATION
UNIVERSITI UTARA MALAYSIA
November 2018

IMPACT OF FACTORS INFLUENCING USE OF E-COMMERCE ON PERFORMANCE OF MALAYSIAN SMALL AND MEDIUM ENTERPRISE

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Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
Universiti Utara Malaysia,
in Partial Fulfillment of the Requirement for the Doctor of Business Administration

OTHMAN YEOP ABDULLAH GRADUATE SCHOOL OF BUSINESS
UNIVERSITI UTARA MALAYSIA

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Program Pengajian *(Programme of Study)*	:	**Doctor of Business Administration**
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ABSTRACT

Despite the huge government effort spent, the performance of Small and medium enterprise (SME) in Malaysia has not been in tandem with the pace of other nations. In this light, e-commerce offers the resolution to improve the SME performance. However, the e-commerce technology available in Malaysia has not been fully utilized. This research focuses on SMEs' adoption of technology and its impacts on their performance. This research examines the relationships among performance expectancy, effort expectancy, social influence, facilitating condition, perceived risk, use of e-commerce and SME performance. The research framework has been developed based on Resource-Based View (RBV) and Unified Theory of Acceptance & Use of Technology (UTAUT). The research data were collected from Malaysian SMEs operators who adopted e-commerce. A total of 1,595 companies were studied. Out of which 202 questionnaires were returned. This research used census sampling technique while the data were analyzed by using the SPSS 20 and SmartPLS 3.0 to examine its measurement model and structural model. The results showed that performance expectancy, effort expectancy, facilitating conditions and perceived risk have a significant direct relationship with the use of e-commerce, except social influence. The use of e-commerce has shown a significant direct relationship with SME performance. Besides that, the use of e-commerce as a mediating variable revealed that with the significant use of e-commerce by SMEs, performance expectancy, effort expectancy, facilitating conditions and perceived risk influenced SME performance except social influence. Thus, the findings of this research provide important insights to policy-makers, researcher and industry players to create further understanding on the impact of e-commerce adoption on SMEs performance.

Keywords: Use of e-commerce, SME performance, RBV, UTAUT, perceived risk, SMEs.

ABSTRAK

Di sebalik usaha gigih yang telah dilakukan oleh pihak kerajaan, prestasi Perusahaan Kecil dan Sederhana (PKS) di Malaysia masih tidak seiring dengan negara-negara lain. Oleh sebab itu, e-dagang menawarkan penyelesaian untuk meningkatkan prestasi PKS. Walau bagaimanapun, teknologi e-dagang yang ada di Malaysia tidak digunakan sepenuhnya. Kajian ini memberi tumpuan kepada penggunaan teknologi e-dagang dan kesannya terhadap prestasi PKS. Kajian ini menyelidik hubungan antara jangkaan prestasi, jangkaan usaha, pengaruh sosial, keadaan kemudahan, tanggapan risiko, penggunaan e-dagang dan prestasi PKS. Rangka kerja kajian ini adalah berdasarkan kepada Pandangan Berasaskan Sumber (RBV) dan Penggabungan Teori Penerimaan & Penggunaan Teknologi (UTAUT). Data diperolehi daripada PKS Malaysia yang menggunakan e-dagang. Sebanyak 1,595 syarikat telah diteliti dan hanya 202 soal selidik dikembalikan. Kajian ini menggunakan teknik persampelan bancian. Data dianalisis dengan menggunakan SPSS 20 dan SmartPLS 3.0 untuk mengkaji model pengukuran dan model strukturnya. Hasil kajian menunjukkan bahawa jangkaan prestasi, jangkaan usaha, keadaan kemudahan dan tanggapan risiko mempunyai hubungan langsung yang ketara dengan penggunaan e-dagang kecuali pengaruh sosial. Penggunaan e-dagang menunjukkan hubungan langsung yang ketara dengan prestasi PKS. Selain itu, penggunaan e-dagang sebagai pemboleh ubah perantara menunjukkan bahawa dengan penggunaan e-dagang yang ketara oleh PKS, jangkaan prestasi, jangkaan usaha, keadaan kemudahan dan anggapan risiko mempengaruhi prestasi PKS kecuali pengaruh sosial. Oleh itu, dapatan kajian ini memberikan pandangan penting kepada pembuat dasar, penyelidik dan pakar industri untuk lebih memahami impak faktor penggunaan e-dagang terhadap prestasi PKS.

Kata kunci: Penggunana E-dagang, prestasi PKS, RBV, UTAUT, tanggapan risiko, PKS.

ACKNOWLEDGEMENT

I would like to express my deepest appreciation and gratitude to everyone who has contributed in completing this business consultation report. Firstly, it was my pleasure to be guided under Dr. Arfan Shahzad's supervision. It is not enough to thank you very much to his for his supervision to help me to achieve my academic goal. Without his valuable support and direction, my report would not definitely have been possible. Secondly, I would like also to thank my parents, my daughter, my wife and my sisters for their love and support. My goal would not have been achieved without them. I dedicate this work to my parents, my wife and my daughter. Thirdly, I had a very enjoyable study at Othman Yeop Abdullah Graduate School of Business (OYAGSB) in Universiti Utara Malaysia (UUM). It does have a wonderful study environment such as helpful Professors, Doctors and classmates. Finally, I would like to thank all of my friends for their encouragement during my study.

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LIST OF ABBREVIATION/NOTATIONS/GLOSSARY OF TERMS

11MP	Eleventh Malaysian Plan
ACCCIM	Associated Chinese Chambers of Commerce & Industry of Malaysia
AIM	Agensi Inovasi Malaysia
ASEAN	Association of Southeast Asian Nations
ATUT	attitude towards using technology
AVE	average variance extracted
B2B	business-to-business
B2C	business-to-consumer
B2G	business-to-government
BI	behavioral intention
BNM	Bank Negara Malaysia
BU	behavioral use
C2B	consumer-to-business
C2C	customer-to-customer
CAGR	compounded average growth rate
CB-SEM	covariance based-structural equation modelling
CFA	confirmatory factor analysis
CI	confidence interval
CMA	Communication and Multimedia Act 1998
CMB	common method bias
CoD	Cash-on-delivery
CPA	Consumer Protection Act 2006
CPA	Copyright Protection Act 1997
CR	composite reliability
DV	dependent variable
EC	e-commerce
ECA	Electronic Commerce Act 2006
EDI	Electronic Data Interchange
EE	effort expectancy
EFT	Electronic Funds Transfer
ER	economical risk
ERP	enterprise resource planning
FC	facilitating condition
FR	functional risk
G2B	government-to-business
G2C	government-to-customer
GDP	Gross Domestic Product
GST	Goods & Service Tax
HACCP	Hazard Analysis Critical Control Point
HIPs	High Impact Programmes
HM	Hierarchical Model
HTML	Hypertext Markup Language
HTMT	Heterotrait-Monotrait Ratio
ICT	Information and Communication Technology
IDT	Innovation Diffusion Theory
IMP	Industrial Master Plan

ISO	International Standard Organization
IV	independent variable
JAKIM	Halal Standard
LL	lower limit
LV	latent variable
MAMPU	Malaysian Administrative Modernisation & Management Planning Unit
MATRADE	Malaysia External Trade Development Corporation
MDEC	Malaysia Digital Economy Corporation
MIS	Management Information Systems
MM	Motivational Model
MNC	Multinational Corporation
MOQ	minimum order quantity
MOSTI	Ministry of Science, Technology and Innovation
MPCU	The Model of PC Utilization
MRS	manufacturing-related services
MV	Mediating Variable
NEP	New Economic Policy
NSDC	National SME Development Council
OECD	Organization of Economic Corporation and Development
OTG	on-the-go
OYA-GSB	Othman Yeop Abdullah Graduate School of Business
PDPA	Personal Data Protection Act 2010
PE	performance expectancy
PEMUDAH	Pasukan Petugas Khas Pemudahcara Perniagaan
PLS	partial least square
PR	perceived risk
PWS	personal workstations
R&D	research & development
RBV	Resource Based View
RGM	Retail Group Malaysia
ROA	return of asset
ROE	return of equity
SCT	Social Cognitive Theory
SEM	structural equation modeling
SI	social influence
SIRIM	Malaysian Standard
SME Corp	Small Medium Enterprise Corporation
SME	Small Medium Enterprise
SOGA	Sales of Goods Act 1957
SP	SME performance
SPSS	Statistical Package for the Social Sciences
SR	security risk
SSM	Companies Commission Malaysia
TAM	technology acceptance model
TDA	Trade Description Act 2011
TMA	Trade Marks Act 1976
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action

UB	use behavior
UE	use of e-commerce
UL	upper limit
USA	United States of America
UTAUT	unified theory of acceptance & use of technology
UUM	Universiti Utara Malaysia
VB-SEM	variance based-structural equation modelling
VIF	variance inflation factor
VRIN	value, rarity, imitability and non-substitutable
VRIO	value, rarity, imitability and organization
WWW	World Wide Web
YIM	Yayasan Inovasi Malaysia

CHAPTER ONE

INTRODUCTION

This chapter introduces the study. The first chapter of this dissertation describes the overall idea, starting with the background of the study, problem statement, research questions, research objectives, and continuing with the discussion of the scope of the study, the significance of the study and the definition of key terms.

1.1 Background of the Study

Globally, most governments have realized that Small and Medium-sized Enterprises (SMEs) have an economic value in jobs creation, poverty reduction, regional development and Growth Domestic Product (GDP) improvement (Ayyagari *et al.*, 2007). They have posted the opportunity which may grow from SMEs to future large companies and corporations (Abouzeedan, 2011), hence, the wealth of a nation and growth of economies are highly dependable on the SMEs performance.

Generally, in most of the countries, SMEs make up 95 percent of the economy (Kotelnikov, 2007). For example, 99.8 percent of the established firms in Europe are SMEs which these SMEs create two-thirds of employment (Carayannis *et al.*, 2006). While in Malaysia, SMEs account for 98.5 percent or 907,065 of total businesses established (SME Corporation Malaysia [SME Corp], 2017). On average, SMEs contribute to almost 50 percent of the GDP in high-income countries (Ayyagari *et al.*, 2011) while Malaysian SMEs contribute 36.6 percent of the country's GDP with the

growth rate of 5.2 percent (SME Corp, 2017). Therefore, it is important to study the observed gap in SME performance as SMEs supports a country's growth.

Despite SMEs' contribution to the Malaysian economy today, current Malaysian SMEs are faced with several disadvantages. SMEs generally underutilize the Information and Communication Technologies (ICT) to enhance the SME performance such as to promote their business through e-commerce. In this regard, many SMEs have the limited resource or digital capability to use e-commerce that has revolutionized the way of people doing business in developed countries.

Meanwhile, compared to larger firms, SMEs are flexible and are able to integrate innovation or inventions created by firms' development activities (Abouzeedan, 2011). Wincent (2008) noted that SMEs which are able to engage innovation in their business activities would have better performance. The rapid development in ICT, especially e-commerce have brought a lot of opportunities to the business world. E-commerce motivates businesses to expand their trading activities beyond their physical territories. Furthermore, Internet technology has abundantly been used in the devices such as smartphones, tablet, laptop computers and smart televisions. Thus, the use of Internet technology broadens the SMEs business opportunity by connecting more diversified customers.

Large organizations and multinational companies (MNCs) utilize ICT to enhance their operational efficiency. SMEs are much more conservative in ICT usage because of their

weaker financial resources and digital capabilities. Trading locally and their operation time are limited to normal working hours, suppress their growth potential. Affordable e-commerce technologies diminish these constraints and enable them to operate 365 days with 24-hour operation nationwide. Through e-commerce, time and distance do not hinder their business operation anymore.

Besides that, use of e-commerce can bring changes in increasing the productivity and efficiency, supporting business transformation from conventional to digitization and connecting new supplier and customers from either locally, regionally or globally. However, e-commerce usage by SMEs in developing countries is low pace in assimilating it into their business. To improve SME performance sustainability and to motivate them to use e-commerce to gain competitive advantages, Malaysian government plays a significant role. Thus, factors of using e-commerce are studied to understand more about its role in improving the SME performance.

E-commerce is the concept of monetary trading online over the Internet. The trading activity involves the buyers and sellers exchanging money and goods or services in a virtual marketplace. The goods can either be tangible and intangible, which virtually accessed online for example, electronic currency used in the game, e-book, software keys and consumables in apps. Generically, the goods will be delivered later, after the online payment done. E-commerce helps SMEs to improve customer services, expand product marketability, enhance customer experience (for example relationship, communications, loyalty and so on) and promote collaboration with business partners

in the entire supply chain. The positive correlation between the usage of e-commerce and bank's performance concluded that banks used of e-commerce has improved their performance (Asiabugwa & Munyoki, 2013). Thus, as a successful model to SMEs, e-commerce platforms are good options available to improve their performance.

Baker *et al.* (2015) reported that United Kingdom Internet retail volumes between 2003 and 2012 grew from £4.8 billion to £31.1 billion. This figure represents only a third of SMEs selling online. Because of encouragement SMEs selling online by the United Kingdom government, SMEs gain fast-growing, export more and create more jobs. However, less than a third of United Kingdom SMEs trade online. In this light the barriers for the use of e-commerce are lack of digital capability, technical issues, and trust issues (Baker *et al.*, 2015).

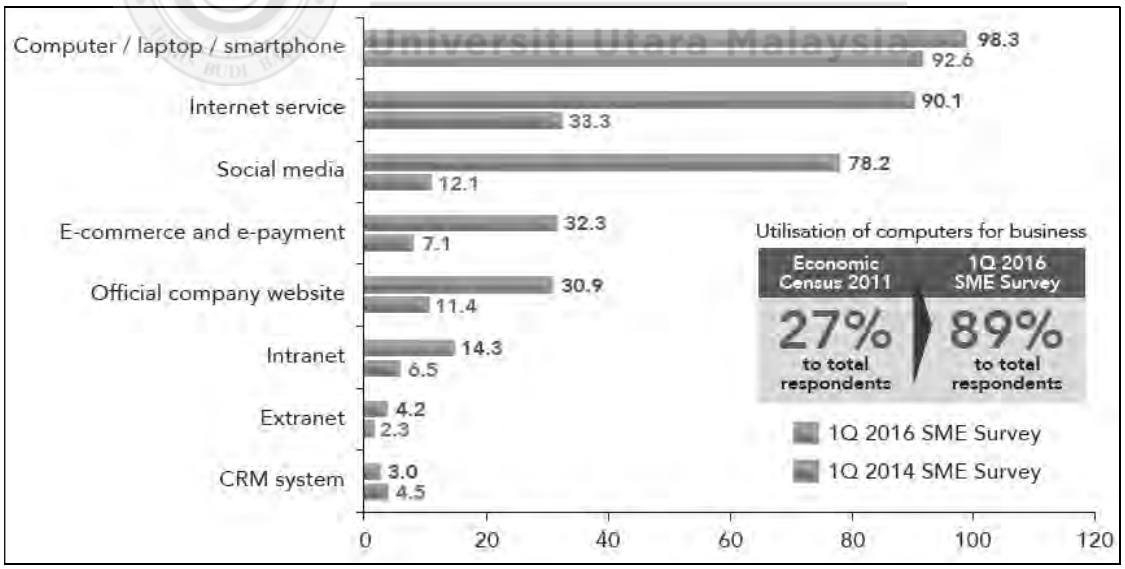

Figure 1.1
Report of 2016 SME Survey. SME involvement in e-commerce and e-payment.
Source: SME Corp (2016)

Like the United Kingdom, SMEs in Malaysia are not really interested or ready enough in the use of the e-commerce. Only one percent of the retail market was available online and about 70 percent of SMEs do not have a website (Nadaraj, 2015a). Nadaraj (2015b) reported that only 27 percent of their staff are computer literate. Zakaria and Hashim (2003) showed that merely 15 percent of the SMEs were using the Internet to expedite their business activities. However, in Figure 1.1, SME Corp (2016) reported that 90.1 percent of 2,176 SMEs (1Q 2016) has utilized the Internet in their business activities and 78.2 percent has promoted their products and services via social media. Alam (2009) indicated that only 20 percent of SMEs in Malaysia use basic information technology in their daily operations but SME Corp (2016) revealed that 89.1 percent of the SMEs has utilized computers for business purposes.

Despite the fast improvement of the ICT usage, the use of e-commerce and e-payment recorded only 32.3 percent (1Q 2014: 7.1 percent) while 30.9 percent (Q1 2014: 11.4 percent) having their own websites (SME Corp, 2016). In Figure 1.2, SME Corp (2017) revealed that 7.4 percent of 2,236 SMEs has adopted e-commerce marketplace in the Q1 2017. Hence, these figures indicate that it is still a huge gap of improvement available for SMEs performance via the use of the e-commerce.

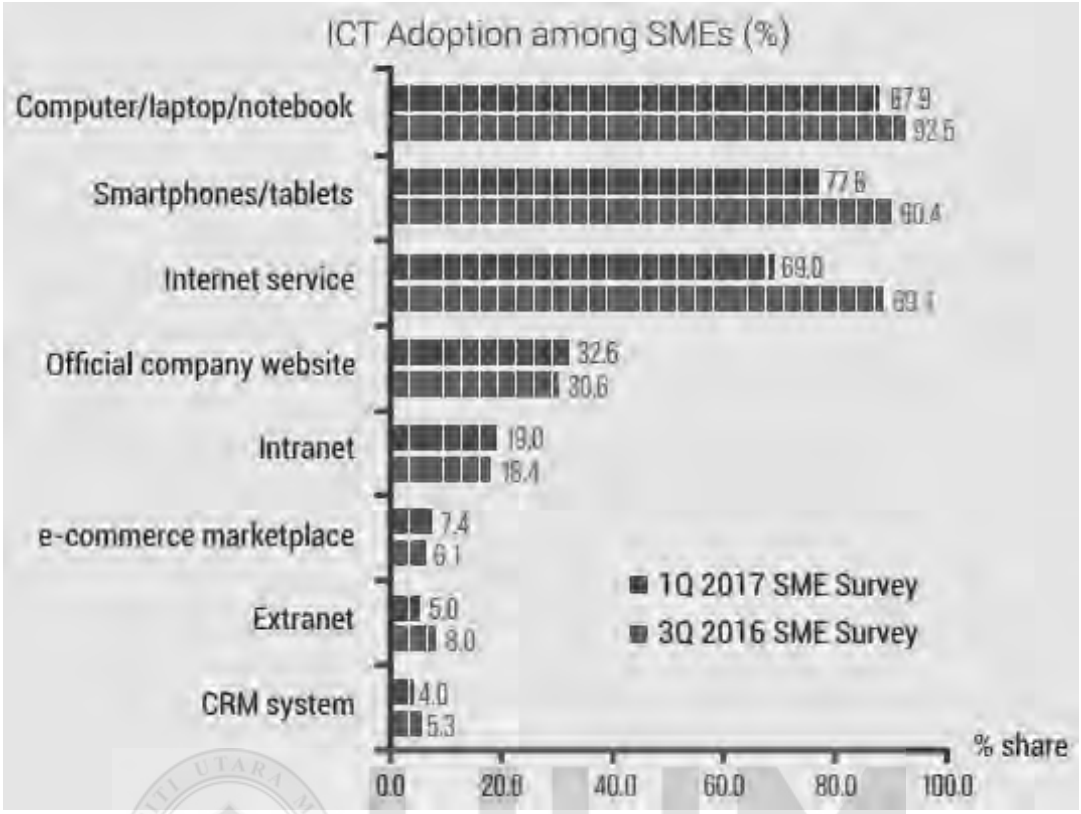

Figure 1.2
Report of 2017 SME Survey. SME involvement in e-commerce marketplace.
Source: SME Corp (2017)

Electronic payment and e-banking were a useful tool as payment gateway in e-commerce transaction has been promoted. But, in Figure 1.3a, only 34 percent of 541 respondents use e-Banking, most of them were from ICT and Logistics sectors while another 40 percent indicated that they will shift to e-banking soon (Associated Chinese Chambers of Commerce & Industry of Malaysia [ACCCIM], 2014). In Figure 1.3b, 76 percent of them responded that they concerned about the security on the e-banking transaction. Thus, their findings highlighted that perceived risk may be a barrier for them to adopt the e-commerce.

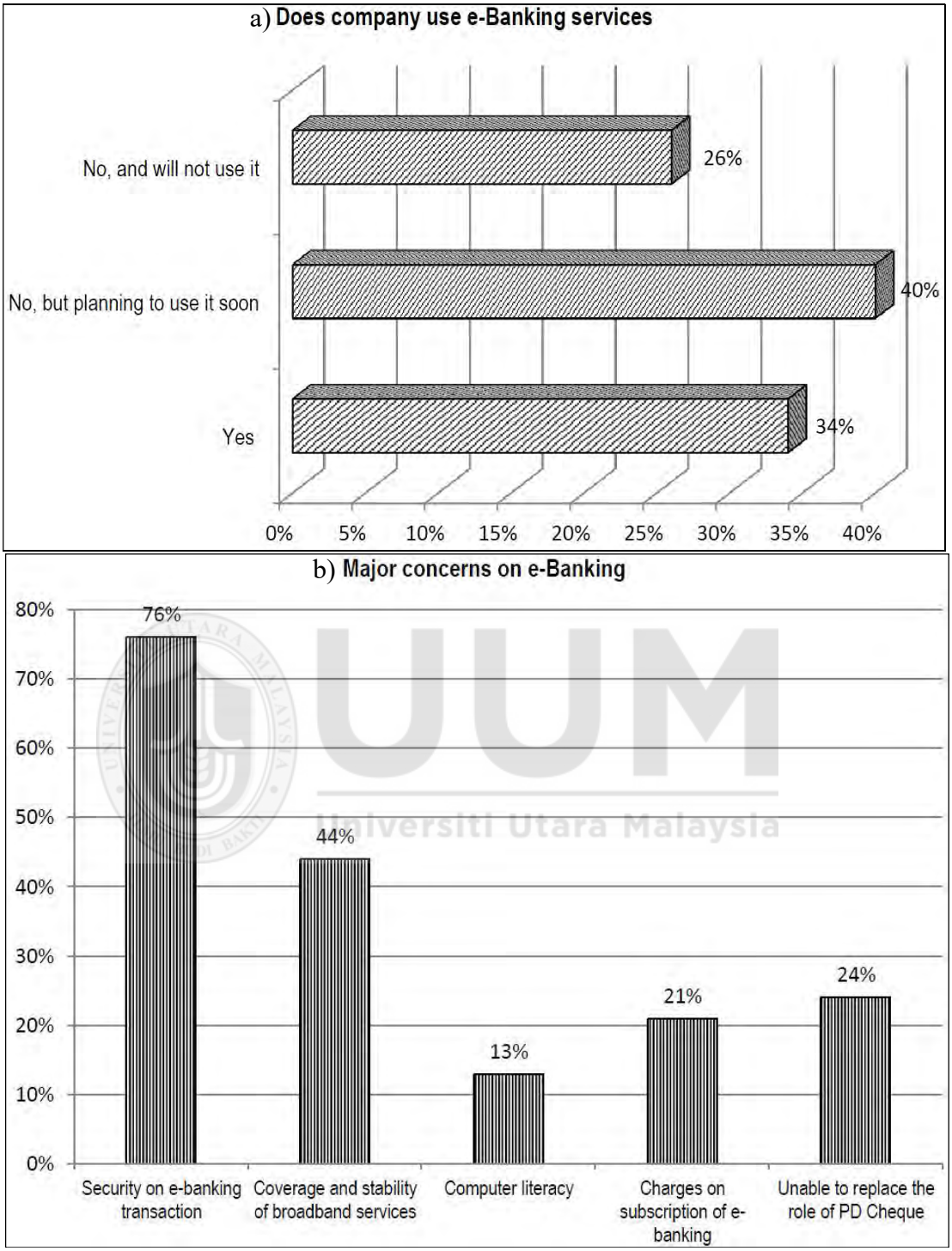

Figure 1.3

Report of 2014 SME Survey. a) SME involvement in e-banking services. b) Major concerns in using the e-commerce as the transaction method

Source: ACCCIM (2014)

1.2 Problem Statement

From a practical point of view, economic growth of any country is strongly associated with its SME performance. SMEs play a significant role because of their contribution almost 50 percent of GDP in high-income countries. In developed countries such as Japan and USA, both countries are having more than 90 percent SMEs of their total business (Pandya, 2012). Quality SME performance sustains country's economic output and employment. The success model from developed countries has provided the right formula to the developing countries, especially Malaysia which has only 36.6 percent of GDP contributed by SMEs in 2016 (SME Corp, 2016). Aligning with primary boost for SME performance by SME Corp, the Malaysian government has implemented many strategic initiatives and ICT promotion program to help SME to perform. Unfortunately, the growth in SMEs has not been in tandem with the pace with other nations.

SMEs need to use e-commerce to strengthen their profitability because of its benefit. As discussed earlier, e-commerce offers so much benefit that will entirely transform the way of doing business. However, even e-commerce has been proven to produce in performance, e-commerce usage by SMEs is still not at a promising level. In Malaysia, the share of total retail e-commerce market is still very low at two percent (the Star, 2015). Although Malaysia has a high number of internet users and yet there are many SMEs not using e-commerce to improve their performance. The statistics have spoken out the reality of the current situation which requires attention. It is undeniable that SMEs is the core contributor to the economic growth in Malaysia. Regrettably, the

growth in SME entrepreneurial activity has not been catching up with the pace of the overall development of the nation (Alzu'bi, 2012).

It is observed that SMEs have poor growth in performance with a slow increment of 3.7 percent in their contribution to GDP, from 32.2 percent in 2010 to 35.9 percent in 2014, in five year time (SME Corp, 2015b). In 2016, Malaysian SMEs contribute 36.6 percent of country's GDP with the growth rate of 0.7 percent (SME Corp, 2017). SME Corp targets SMEs may contribute 41.0 percent of the GDP in the year of 2020 (SME Corp, 2015a). It may be a near missed scenario if we misalign the focus on the SME performance to the country's growth. To close the gap, more attention shall be given to strengthening SME performance.

Furthermore, e-commerce is a catalyst for speeding up the digital transformation as it is a proven solution to this problem in the developed countries (Dobbs *et al.*, 2013) but now it is in a consolidated phase which traditional firms begin to use the e-commerce to enhance their existing business activities (Dandre *et al.*, 2014). Thus, the e-commerce adoption will gradually improve the GDP contributed by the SMEs. To sum up, the practical problem on low usage of e-commerce creates a barrier for SME to enhance their performance in Malaysia, must be tackled.

From a theoretical point of view, to understand what determines the use of e-commerce which links to SME performance, this research combined Resource-based View (RBV) and Unified theory of Acceptance & Use of Technology (UTAUT). RBV and UTAUT

were employed as both theories are known as the most comprehensive firm performance study and ICT adoption study, respectively. In short, this study focuses on an integrated model of use of e-commerce in Malaysian SMEs by viewing it as two mainstream gaps: use of e-commerce and SME Performance. Thus, the expected result from the research is to provide a complete research framework for using e-commerce in SMEs that measures SME performance from the post-adoption users.

The UTAUT theory consists of performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), use of e-commerce (UE). Survey consistently shows that SMEs associate a great concern of risk with e-banking and e-commerce financial transactions (ACCCIM, 2014; SME Corp, 2016). Although there are many studies conducted on the SMEs which adopt e-commerce, there are very limited studies that designed a framework that incorporates the perceived risk for factors influencing e-commerce adoption in Malaysian SMEs. Furthermore, in regards to monetary transactions over a payment gateway, perceived risk (PR) is added as it is generally seen as a barrier for SMEs to use e-commerce. SME performance (SP) can be achieved by exploiting the resources and good digital capability in using the e-commerce. Thus, this research is aimed to provide the statistical proof of the relationships discussed above.

Many competing models for ICT usage prediction have emerged in technology acceptance literature. Venkatesh *et al.* (2003; 2011 and 2012) developed the UTAUT/UTAUT2 models to provide the unified view of technology acceptance

models. In this research, UTAUT model was adapted as an underpinning theory to investigate the factors of the use of e-commerce by Malaysian SMEs due to the advantages that could be derived from the unified model.

UTAUT model is considered as the best approach since unlike other models, it addresses both individual and organizational factors in ICT acceptance (Venkatesh *et al.*, 2003; 2011). The constructs of UTAUT originated from eight prominent technology adoption theories and models that were unified to explain the adoption and usage of ICT (Venkatesh *et al.*, 2003). Moreover, the UTAUT model was able to explain for 70 percent and 50 percent of the variance in intention and use, respectively in the studies by Samaradiwakara and Gunawardena, (2014) and Venkatesh *et al.* (2003 & 2011). Moreover, UTAUT recorded the highest explanation variance compared to eight other prominent technology adoption theories/models and TAM 3. Impressively, as of May 2018, Venkatesh *et al.* (2003) paper has been cited 20,669 times as shown in Google Scholar. Furthermore, UTAUT paper is the 2nd most cited paper ever published in the MIS Quarterly journal (Venkatesh *et al.*, 2011). The significant contribution of UTAUT in ICT leads the researcher to adapt UTAUT as a suitable and extensive model to understand user acceptance in the context of use of e-commerce by SME.

The RBV theory is a theory of strategic management, which has been widely applied to the analysis of SMEs in developing countries. Resources such as digital capabilities of use of e-commerce influence SME performance. RBV theory emphasizes strategic choice taken by the SME's managerial to deploy key resources to improve performance.

Internal firm's capabilities and resources are the key sources to achieve competitive advantage than the external factors (Arbak, 2014). Therefore, for the creation of the research framework, the researcher would choose the RBV perspective to analyze the role it plays in the relationship between the use of e-commerce and SME performance.

Most SMEs are afraid of risks associated with e-commerce and they prefer to do their business traditionally (Chivasa & Hurasha, 2016). UTAUT is used as a primary framework to study SMEs' usage of e-commerce. RBV is employed as a linkage to study the use of e-commerce to improve the Malaysian SME performance. Nevertheless, since e-commerce usage differs from the conventional ICT usage in some ways, especially involving the monetary transaction in the trading. Shaharudin *et al.* (2012) recommended the future research to take into consideration of perceived risk as a significant factor to study the use of e-commerce among Malaysian SMEs to increase accuracy and generalizability of the study. Hence, as discussed in the introduction, it is essential to assimilate risk perception into the research framework.

Performance expectancy exhibits the degree to which SMEs believe that using e-commerce will help them to attain gains in their performance (Venkatesh *et al.*, 2003). From the perspective of SMEs, most of them do not understand deeply the nature of e-commerce ecosystem for example, the payment gateway as a trustee, courier service provider, trading processes and so on. These components of e-commerce ecosystem can make their retail SMEs work simplified. Unfortunately, most SMEs have their company website that generally served to provide information (SME Corp, 2016).

SMEs aware that the ecosystem provided in e-commerce platform can improve their performance, but they do not have the appropriate digital competency to use the e-commerce. Besides, those SMEs which already adopt the e-commerce, complain about they have received many online enquiries from online customers. However, it is very few of these customers have turned into the completed orders. This is once Poon and Swatman (1997) who suggests that e-commerce is one of the most disappointing and de-motivating businesses amongst SMEs adopting the e-commerce. In this research, deficient performance expectancy may generally discourage SMEs from using e-commerce.

Effort expectancy exhibits the degree of ease related with the use of e-commerce (Venkatesh *et al.*, 2003). E-commerce provides the effortless business activities in generating documents such as purchase order, delivery order, tax invoice, delivery/system tracking and simplifies inventory control, promotion/marketing, voucher issuance, customer database management, customer engagement, dispute issue, listing duration, loyalty program and others. E-commerce looks comprehensive enough in providing all the integrated functionality simpler and easier but SMEs may prefer the conventional way of doing business because they perceive using the complicated system may be a challenging task to their staffs. With implementing the e-commerce, maintenance of e-commerce and related technologies create potential problems for SMEs. Item listing in the platform, inventory updating after re-stock and dispute issue requires a lot of efforts from staff resources to attend the operation issue. If SMEs

perceive using the technology require a lot of effort, then it may generally discourage SMEs from using e-commerce.

Social influence reflects the degree to which SMEs perceive that important peers (customer, supplier, government and competitor) believe that they should use e-commerce to increase their competitiveness (Venkatesh *et al.*, 2003). However, not many success stories about B2B or B2C have been shared in the extant literature. Most of the SMEs remain in their comfort zone and not to transform into digitalizing their business. In this environment of lack of influence from their peers, social influence may generally discourage SMEs from using e-commerce.

Facilitating condition exhibits the degree to which SMEs believe that a technical and organizational infrastructure exists to support the use of e-commerce (Venkatesh *et al.*, 2003). The financial constraints are the generic issues to SMEs mean that they perceive using e-commerce is costly, compared to the traditional operations and marketing communication tools. Human resource issues mean that staff's digital competency readiness to develop, operate and maintain the e-commerce. SME managers and employees could be in the limited knowledge that leads the SMEs often depend on external service providers. Besides, they are lacking interactive facilities to perform online monetary transactions instantaneously. Failure among SMEs will be considerably high if no interference and support from external parties are given (Shamsuddin, 2014) as poor facilitating conditions may generally discourage SMEs from using e-commerce.

Perceived risk is referred to an individual's subjective perception of potential issues while performing monetary transactions over ICT services (Forsythe *et al.*, 2006; Koenig-Lewis *et al.* 2010; Mallat *et al.*, 2006; Mallat, 2007; Wessels & Drennan, 2010). The examples of the perceived risk of financial services are privacy issues, app/software malfunction, connectivity loss and typo mistakes. Thus, perceived risk is a vital role attitude plays in the use of financial services (Hsu *et al.*, 2011). In this research, high perceived risk may generally discourage SMEs from using e-commerce. Thus, this research expands the UTAUT framework in the context of e-commerce by incorporating perceived risk into the research framework.

There are numerous studies related to the use of e-commerce and SME performance (Zhu & Kraemer, 2002; Zhu, 2004; Al-Dmour & Al-Surkhi, 2012; Azeem *et al.*, 2015; Mohammed, 2015; Popa & Soto Acosta, 2015; Gregory *et al*., 2017; Macchion *et al*., 2017). Still, there is lack of literature pertaining to SMEs use of e-commerce in developing countries, especially in Malaysia context. This is another motivation for the implementation of this current research effort, which is to contribute empirical evidence from the Malaysian perspective. This dissertation covers the combination of UTAUT-RBV and introduction of the perceived risk as an additional factor to the study. Driven by the above motivation and knowledge gaps, this research evaluates the factors influencing the usage of e-commerce, that could improve the performance of SMEs.

1.3 Research Questions

The main research questions of this dissertation are a) do SMEs use of e-commerce improve their SME performances, and b) what factors determine the use of e-commerce by SMEs. In this regard, there is an obvious need to understand why SMEs are willing or unwilling to use e-commerce by examining a comprehensive model on the use of e-commerce. With that motivation, the specific research questions for this dissertation are as follows:

1. Do performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk have a relationship with the use of e-commerce?
2. Does use of e-commerce have a relationship with SME performance?
3. Does use of e-commerce mediate the relationships between performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk on SME performance?

1.4 Research Objectives

Based on the research questions, the main objective of this research is to investigate the factors affecting the use of e-commerce to promote SMEs to perform successfully. Hence, the research objectives are addressed as below:

1. To examine the relationships between performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk and use of e-commerce;
2. To examine the relationships between use of e-commerce and SME performance; and

3. To examine the mediation role played by use of e-commerce in the relationship between performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk and SME performance.

1.5 Scope of the Study

This study focuses only on companies that have used e-commerce and are registered in Lelong.my. According to Alexa.com in the year of 2016, Lelong.my was the second largest online marketplace in Malaysia. Established 19 years ago, Lelong.my remains as one of the largest B2C and C2C e-commerce marketplaces in Malaysia. More than 1.3 million products across all categories including phone & tablet, electronics & appliances, fashion, beauty & personal cares, watches & clocks, home & gardening, sports & recreation, books & comics, computer & software, camera & camcorder, jewelry & accessories, baby, kids & mum, cars & transport, food & beverages, pet supplies and others are sold through this platform (see Table A1.2). Thus, Lelong.my e-commerce arena has been well-recognised and its use could have a positive impact on SME performance.

This study investigates the relationship between independent variables (effort expectancy, performance expectancy, social influence, facilitating condition and perceived risk), mediating variable (use of e-commerce) and dependent variables (SME Performance). UTAUT and RBV are models that study the dynamic of the above relationships. To obtain quantitative data, an online survey questionnaire was

conducted. The survey involved companies who adopted e-commerce by being members of e-commerce marketplace. The survey was specifically developed for owner/manager of the business, solely e-commerce adopters in the e-marketplace, because they could provide essential information related the use of e-commerce experience that links to its SME performance. The unit analysis of this research is limited to SMEs registered as members of e-commerce marketplace. In this study, SME performance was measured based on the scale developed by Mohd Rosli *et al.* (2012) and adapted by Shamsuddin (2014). SME performance was measured through growth in sales revenue, profitability, return on asset, return on sales, market share, labor productivity, level of customer satisfaction, overall financial performance, customer loyalty and growth of the machine or worker.

1.6 Significance of Study

The significance of the study can be divided into two aspects – theoretical and practical contribution.

1.6.1 Practical Contribution

This study investigates the main factors contributed to use of e-commerce, which leads to the SME performance. By using e-commerce, SMEs may improve their performance in doing business by adopting a new way of trading which offers SMEs with On-the-Go business transactions which could be done anytime and anywhere. As the usage of e-commerce increases, the result of this study will help to guide e-commerce website developers, online retailing marketplaces and government agencies that they should

concentrate to promote the use of e-commerce. Finally, the expected result of the research should provide knowledge to those interested in using e-commerce as a tool to increases their firm's competitive advantage. Moreover, the findings provide room for improvement for industry players and government agencies and allow them to deploy the right marketing strategy for using e-commerce.

1.6.2 Theoretical Contribution

This research used two theories that can be used in e-commerce context, namely the RBV and UTAUT based on the focus of this study which is to determine SME performance in using e-commerce by Malaysian SMEs based on RBV and UTAUT research framework. Thus, this research helps generate a comprehensive integrated model for the use of e-commerce to improve SMEs performance. The findings of this research are expected to contribute to the use the technology as a crucial digital competency in RBV literature. It is expected that the findings to extend a comprehensive model on user acceptance of e-commerce. The study will also contribute to testing of performance and use of e-commerce by combining the RBV and UTAUT model. The hypothesized relationships will be determined to further validate the reliability of the dimensions in this research. The impact of incorporating perceived risk is expected to present a better understanding of the use of e-commerce. Academicians and researchers could also use the framework for furthering their research to explore the area of m-commerce and s-commerce in other industries. Lastly, the findings could also be generalized to explain the power of the RBV and UTAUT models in examining e-commerce usage among SMEs in Malaysia.

Besides that, this study focuses on SME performance in the context of e-commerce used in the industry particularly, trading companies, wholesalers and retailers. Moreover, it intends to fill the gap in the body of literature on the use of e-commerce on SME performance. Therefore, the results and recommendations put forward here will potentially provide some ideas on how SMEs can exploit e-commerce resource as one of the digital capabilities to enhance their company competency and performance. Furthermore, this study will highlight the importance of the use of e-commerce as a mediating variable in the relationship between factors and SME performance. In relation to this, it is essential for SMEs to continuously work towards for sustainability and competitiveness. By researching the relationship factors to use e-commerce and SME performance, it is hoped that this study will lead to the increase in efficiency and avoid unnecessary wastage of SMEs' limited resources. Therefore, this study will contribute to the existing literature on the importance of the use of e-commerce and potentially increases SME performance.

1.7 Organization of the Dissertation

This dissertation consists of five chapters – Introduction, Review of Literature, Methodology, Analysis and Presentation of Findings, and Summary and Conclusions. Chapter One of the dissertation provided an overview of the research problem, research objective and scope of the study. The research questions and the context of the research were also described. The definition of terms for each construct and limitation of the research have also been briefly discussed.

Chapter Two presents a review of the literature that is relevant and pertinent to the research topic. The core theory which served as the basis of this research and related empirical studies are presented. The research questions will be drawn from the literature review.

Chapter Three describes the methodology and research design. It will present the research framework model, the survey instrument construction and the data collection procedures. The specific hypotheses to be tested in this study were presented.

Chapter Four of the dissertation provides the results of the data analysis. The data collected from the surveys will be analyzed and the hypotheses will be tested using statistical methods.

Chapter Five of the dissertation presents the discussion of the research findings and conclusions. The implications of the study and recommendations for future study will also be discussed. The contributions and limitations of the study will also be described.

CHAPTER TWO

LITERATURE REVIEW

This section presents theories and previous studies which are applicable to this study. Critical assessment of previous studies indicates that the factors that relate to the use of e-commerce will lead to SME performance in Malaysia. At the end of this section, underpinning theory is selected to elaborate that SME performance is highly dependable on the use of e-commerce. It also explains the dependent variable, which are SME performance as well as the mediating relationship between independent variables.

2.1 Small and Medium-Sized Enterprises (SMEs)

2.1.1 Overview of SMEs Definitions

SMEs are the core of many economies across the globe. However, high failure rate among these SMEs catches attention (Scheers, 2016). Table 2.1 shows that nearly all companies established in both developed and developing economies are SMEs (Harvis, 2015).

There is no universal definition for SMEs as they could be interpreted in various ways in different socioeconomic development of each particular country environment. Commonly, SMEs are defined based on the quantitative measure of employee number, revenue earned, organizational assets, and sector of the industry. Throughout the years, the researcher had agreed that SMEs are defined as those organizations which consist

of up to 250 employees (Kushnir, 2010; Kushnir *et al.*, 2010; Ayyagari *et al.*, 2003). Beside the common definition above, SME definition can be taken into the account from a business perspective, population, industry, political reasons and level of international economic integration (Kushnir *et al.*, 2010).

Table 2.1
Significance of SME Statistic Worldwide – Establishment, Employment, and GDP

Country	**% of establishment**		**% of employment**		**% of GDP**	
	Share (%)	Year	Share (%)	Year	Share (%)	Year
Brunei	98.2	2010	58.0	2008	23.0	2008
Cambodia	99.8	2011	72.9	2011	--	--
China	99.0	--	75.0	--	56.0	--
Germany	99.7	--	79.0	--	49.0	--
Indonesia	99.9	2011	97.2	2011	58.0	2011
Japan	99.7	--	71.0	--	55.3	--
Lao	99.9	2006	81.4	2006	--	--
Malaysia	98.5	2017	65.3	2017	36.6	2017
Myanmar	88.8	--	--	--	--	--
Philippines	99.6	2011	61.0	2011	36.0	2006
Singapore	99.4	2012	68.0	2012	45.0	2012
Taiwan	98.0	--	76.9	--	40.0	--
Thailand	99.8	2012	76.7	2011	37.0	2011
Vietnam	97.5	2011	51.7	2011	--	--

Source: adapted from SME Corp (2017), Harvis (2015) and Shamsuddin (2014)

2.1.2 SMEs Definition in Malaysia

Prior to 2005, there is no common definition of SMEs in Malaysia (Hashim, 2002). SMEs are generally classified based on number of full-time employees, sales turnover and shareholder funds by domestic financial agencies. This definition is mainly applicable to SMEs from the manufacturing sector (Hashim, 2002). Starting from 9 June 2005, the National SME Development Council (NSDC) has defined SMEs was

based on two criteria, specific number of employees and annual sales turnover for wider coverage in the sector from manufacturing-related services (MRS), primary agriculture, manufacturing, and services.

Effective from 1 January 2014, New SME Definition Guidelines and the Bank Negara circular on the New Definition of Small and Medium Enterprise had superseded the SMEs definition by NSDC and Bank Negara Malaysia dated 13 September 2005. The rationale of redefining the SME's definition is timely to adapt to developments in the Malaysian economy since 2005 such as structural changes, change in business trends and inflation (Bank Negara Malaysia, 2013). A business will be classified as an SME if it fulfills either one of the two criteria, namely annual full-time employees or sales turnover, whichever is lower (see Table 2.2). Regardless the categories, by the new definition by SME Corp (2015b), SMEs are defined as:

a) Manufacturing sector: annual sales turnover not exceeding RM50 million or full-time employees not exceeding 200 workers; and

b) Services and other sectors: annual sales turnover not exceeding RM20 million or full-time employees not exceeding 75 workers (Bank Negara Malaysia, 2013).

As the consequences of the new definition, more than 8,000 firms which were previously classified as large firms had now been classified as mainly medium sized SMEs (SME Corp, 2015b). In this research, selected members who registered with Lelong.my was categorized under service and other sectors. Thus, their annual average

sales turnover should be lesser than RM20 million or full-time employees should be lesser than 75 employees.

Table 2.2
Specified Criteria in Determining the SMEs Definition – Full-Time Employee or Annual Sales Turnover

Category	Micro	Small	Medium
Manufacturing	Sales turnover of less than RM300,000 OR full-time employees less than 5	Sales turnover from RM300,000 to less than RM15 million OR full-time employees from 5 to less than 75	Sales turnover from RM15 million to not exceeding RM50 million OR full-time employees from 75 to not exceed 200
Services & Other Sectors		Sales turnover from RM300,000 to less than RM3 million OR full-time employees from 5 to less than 30	Sales turnover from RM3 million to not exceeding RM20 million OR full-time employees from 30 to not exceed 75

Source: Bank Negara Malaysia (2013)

2.1.3 SMEs in Malaysia

In Figure 2.1, SMEs accounted for 98.5 percent or 907,065 of total businesses established in Malaysia. Large companies only comprise of 1.5 percent or 13,814 of all establishments in the country (SME Corp, 2017). From 907,065 SMEs, 76.5 percent are Micro, 21.2 percent are Small and 2.3 percent are Medium. From 907,065 SMEs, 89.2 percent is from Service sector, 5.3 percent from Manufacturing, 4.3 percent from Construction, 1.1 percent from Agriculture and 0.1 percent are from Mining & Quarrying. The SMEs are contributing to about 36.6 percent of the country's 2016 annual GDP, employ 65.3 percent of the labor force and contribute 18.6 percent of the exports.

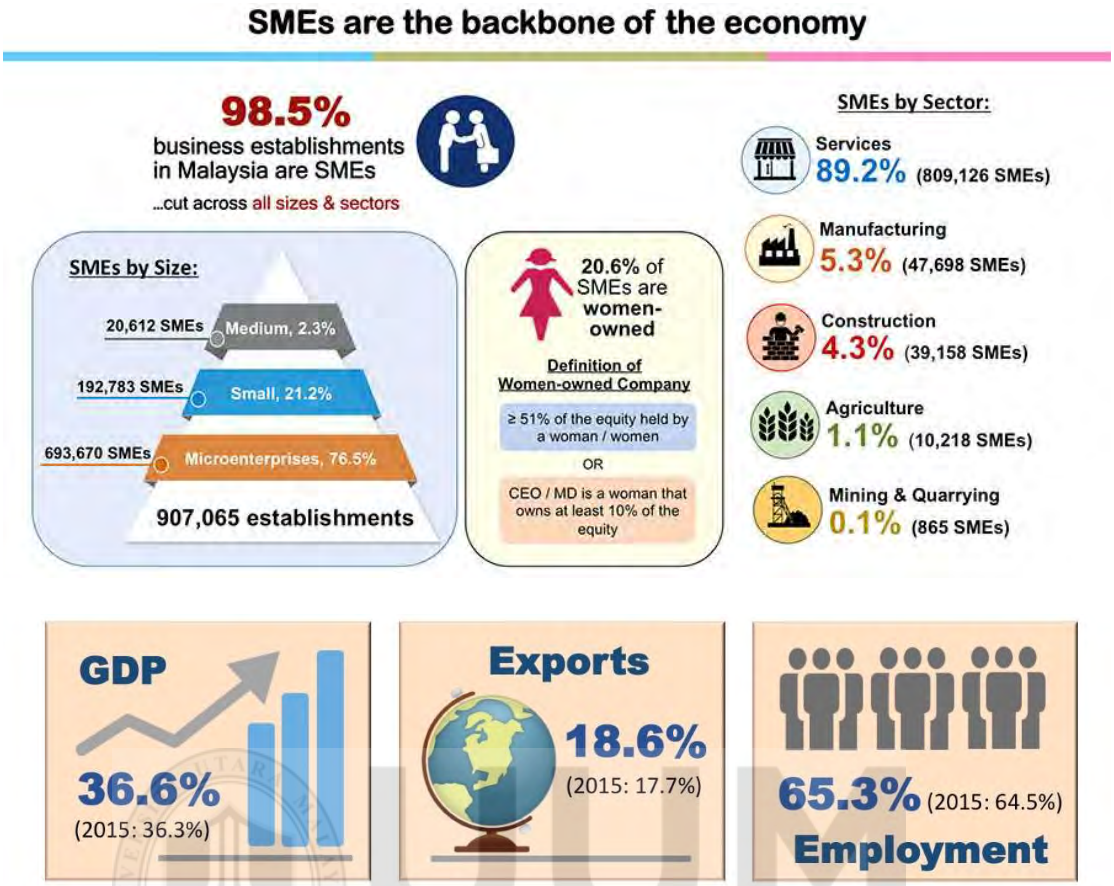

Figure 2.1
SME Statistic at Malaysia
Source: SME Corp (2017)

Based on the SME performance 2020 target in Figure 2.2, three projected growing paths estimates GDP growth are ranged from 6.2 percent to 9.3 percent CAGR from 2000 to 2020. To achieve the targeted growth in 2020, the SMEs contribution shall increase from 33.1 percent to 41.0 percent of GDP, 57.5 percent to 62.0 percent of employment and exports from 17 percent to 25.0 percent. Thus, a gap is observed between the SME performance achievement in 2017 and targeted in 2020.

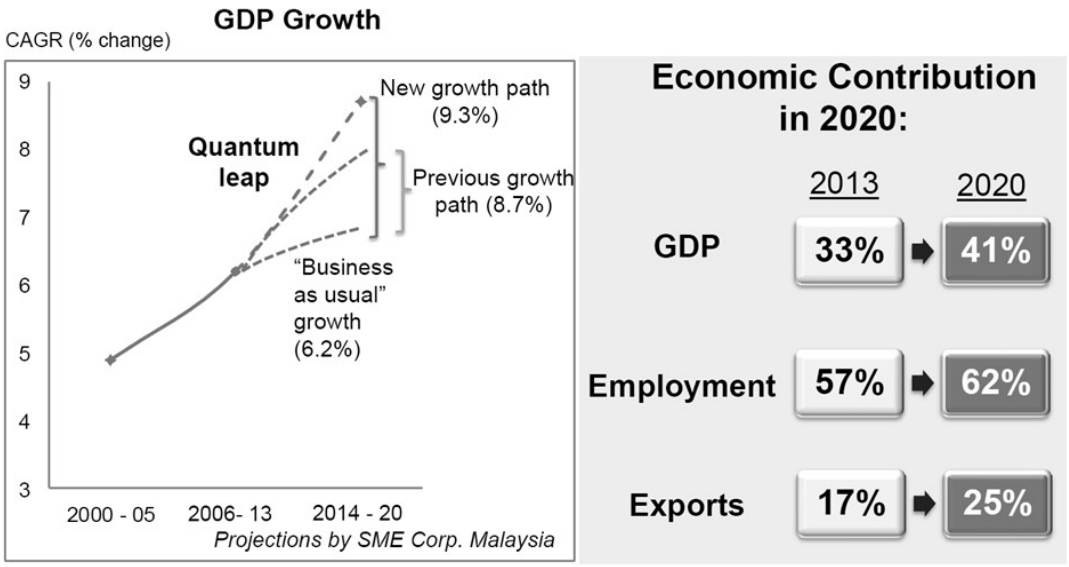

Figure 2.2
GDP growth projected by SME Corp Malaysia and the government expectation of SME economic contribution in 2020
Source: SME Corp (2015a)

2.1.4 The Importance of Malaysian SMEs and Government Effort

Malaysian SMEs benefits to economic development, which include increase job opportunities, increase the reserves and saving against import, improve skills of the employee, help in foreign technology transfer, assist in improving relations between other MNCs and strengthen the industrial base structure. SMEs offer opportunities for people to engage in business, technology, access to talent, job opportunities, meet the needs of the community through the inventiveness and creativity. As a result, it reduces unemployment. Furthermore, employee skill will be improved via technology used in industrial SMEs is simple that can be easily learned by anyone, regardless of educational background. Most importantly, job opportunities creation can prevent the migration of rural population to urban areas.

In addition, in terms of the contribution of SMEs in the country, it can reduce the unemployment rate and inequality in the country. SMEs are to help every industry in the country to avoid dependence on the global economy sensitivity. SMEs do provide options for the nation to reduce imports of products and services. Moreover, according to SME Corporation (2015b), country's industrial base can be strengthened through the technology transfer from MNCs.

SMEs need to be developed in an integrated of Malaysia economy. In 1971, New Economic Policy (NEP) was introduced to reorganize racial economic imbalances and improve the people's welfare. Further Malaysian plan can be seen through the introduction of the Industrial Master Plan 2 (IMP2) that ended in 2005, followed by IMP3 (2005-2020) (Saleh & Ndubisi, 2006). In the Annual SME Integrated Plan of Action 2009/2010 report, 157 key programs amounted RM2.68 billion were launched and these programs had benefitted 732,000 SMEs. The government effort shows that their awareness of the importance of SMEs to energize economic growth for Malaysia.

Up to date, the SME Masterplan (2012-2020) is aimed at bringing SMEs to contribute 41 percent of GDP by 2020. The SME Masterplan served as the basis for SME development in the Eleventh Malaysian Plan(11MP). Six High Impact Programmes (HIPs) which is critical for the success of the Plan was implemented by SME Corp. Malaysia. The six HIPs are Business Registration and Licensing (HIP 1), Technology Commercialisation Platform (HIP 2), SME Investment Partner (SIP) Programme (HIP 3), Going Export Programme (HIP 4), The Catalyst Programme (HIP 5) and Inclusive

Innovation Programme (HIP 6) (SME Corp, 2016). Table 2.3 summaries the results of the HIPs.

Table 2.3
Summary of the Malaysia SMEs High Impact Programme (HIPs)

HIP	Agent	Scope/results
Business Registration and Licensing (HIP 1)	The Malaysian Administrative Modernisation and Management Planning Unit (MAMPU)	First glimpse of the HIP 1 is expected to be realised in November 2016 when application for business registration and licensing can be done online through the Government Digital Gateway (MOSP). As this is a huge project, the ultimate integration of online services will be done in stages based on the readiness of the systems in other registration and licensing bodies.
Technology Commercialisation Platform (HIP 2)	Agensi Inovasi Malaysia (AIM) through its subsidiary PlaTCOM Ventures Sdn. Bhd.	It has successfully brought eight new products to market. As of August 2016, the programme had screened over 776 innovative projects and out of these, 88 have been approved and a total of 110 license deals have been signed.
SME Investment Partner (SIP) Programme (HIP 3)	SME Partner	HIP 3 is expected to begin towards end of 2016 as the SME Partner is appointed with seed capital of RM15 million from the Government.

Table 2.3 (Continued)

Going Export Programme (HIP 4)	Malaysia External Trade Development Corporation (MATRADE)	eTRADE Programme implemented by MATRADE, provides assistance to SMEs to accelerate their exports by participating in leading international e-marketplaces. This programme is targeted to benefit 1,000 SMEs and to generate RM10 million in sales. Additional international B2B and Business-to-Consumer (B2C) e-marketplaces, namely TradeIndia.com, Amazon.com and eBay.com were selected for the eTRADE programme for 2016. Collaboration was also initiated with JinBaoMen (M) Sdn. Bhd., to expand the B2C e-marketplaces serving the China market which include JD.com, TMall.com, Suning.com, Kjt.com and Yhd.com.
The Catalyst Programme (HIP 5)	SME Corp Malaysia in collaboration with Malaysian Bioeconomy Development Corporation Sdn. Bhd	Prior to 2016, it has been completed with 10 companies that participated in the Oxford Accelerator Programme implementing the individually designed action plans for them to become high growth companies. Moving forward, the focus for 2016 will be in three sub-sectors namely medical devices, oil, gas & energy and shipbuilding & ship repair.
Inclusive Innovation Programme (HIP 6)	Yayasan Inovasi Malaysia (YIM), an agency under the Ministry of Science, Technology and Innovation (MOSTI)	Since its inception, the programme has received 262 innovations from various sources, with 22 shortlisted under the programme

Source: Adapted from SME Corp (2016)

2.1.5 Challenges Faced by Malaysian SMEs and Government

Malaysian SMEs, like many countries, face many challenges. The challenges are reviewed from the aspect of internal SMEs challenges, external SMEs challenges, Government challenges and challenges from globalization.

SMEs internal challenges are unaware and misunderstanding of the value chain dynamics, unable to identify of their competitive strength-weakness, inability to improve their productivity from daily operations, unable to upgrade technology resulted from drastic changes, less innovativeness found in their products and strict compliance to product quality, for example ISO, SIRIM, JAKIM, HACCP and so on. SMEs external challenges are elevated levels of bureaucracy in government agencies, difficulty in getting funding from banks and government, rising levels of international competition and limited exposal to better technology and ICT (Saleh & Ndubisi, 2006). These two challenges explain that unable to upgrade their digital capability via their limited resources will affect their SME performance.

Government difficulties are lack of comprehensive policies; inconsistent definitions to categorize SMEs by different agencies; challenges in accessing loans eligibility and other financial related help; under-utilization of technical support, consultation services, and other incentives made available to the agencies of the government; without effective coordination among agencies; insufficient information and data on the improvement; failure to be in the point of industrial development; slow land usage approval to be utilized for industrial purposes; and lastly lack of talented and skilled

workers, which influences the occupational safety and quality during the production (Saleh & Ndubisi, 2006).

Arising from the globalization, SME challenges are advancing to intensified worldwide competition, cost competition from different producers such as India and China, constrained capability to meet the worldwide market, inadequate technology management capacity; insufficiency knowledge acquisition, lack of product development and stagnant at producing low-end product or primary product, limited productivity and quality output, insufficient of skills to match the new competition environment for example high-tech industries, high cost of infrastructure for example bullet train and general lack of knowledge and information. Thus, e-commerce offers the opportunities to SME to take the ride with the globalization. For example, Malaysian Grab or previously known as MyTeksi, can compete with the global giant Uber because the e-commerce offers the same ecosystem to everyone.

2.1.6 SME Performance

Performance is extensively increasing conceptual and empirical exploration in the SME literature (Beck *et al.*, 2005; Rickards, 2007; Saffu *et al*., 2008; Abebe, 2014; Gercek *et al.*, 2016; Hammami & Aghal, 2016). Performance is an understanding of how a firm can elevate and improve its efficiency (Penrose, 2009). Performance theories or models are more than classical accountancy and the financial reporting. Performance evaluation can be seen from competitiveness within strategic management theory (Porter, 1991),

organization theory (Scott, 2003) and networking issues (Wincent *et al.*, 2009; Wincent & Westerberg, 2005).

Firm performance measures the level of success of the firm (Chelliah *et al.*, 2010). Amaratunga and Baldry (2002), Venkatraman and Ramanujam (1986), Venkatraman (1987), and Kaplan and Norton (2000) advocated the idea of using multi-dimensional measures of performance. According to Fullerton and Wempe (2009), performance can be divided into two categories, financial scope and non-financial scope. Table 2.4 illustrates financial performance measurements are most fundamental value of the company. For instance, the financial ratio that is used to study their financial performance is liquidity ratios (current ratio, quick ratio, acid test ratio and so on), profitability ratios (margin, ROE, ROA), debt-to-equity ratios and so on. For non-financial scope, it can be seen from the activities of development of innovation, unique competitive, market orientation for example employee satisfaction, customer service, perceived growth in market share, perceived sales growth and perceived change in cash flow (Haber & Reichel, 2005).

Table 2.4
Two Categories of Performance

Financial performance	Nonfinancial performance
Revenue growth over the last three years.	Investments in R&D aimed at new innovations.
Net profits.	The capacity to develop a unique competitive profile.
Profit to revenue ratio.	New product/service development.
Return on assets	Market development and Market orientation.

Source: Haber & Reichel (2005)

From Hudson *et al.* (2001) point of view, Figure 2.3 illustrates that six dimensions of performance are developed to measure firm performance. Six dimensions that influenced measuring the firm performance are quality, time, finance, customer satisfaction, flexibility and human resources. To sum up, these factors have been further adapted and developed by Mohd Rosli *et al.* (2012) and Shamsuddin (2014) into ten dimensions of performance measure which are growth in sales revenue, profitability, return on asset, return on sales, market share, labor productivity, customer satisfaction overall financial performance, customer loyalty and growth of machine.

Figure 2.3
Six Dimensions and its items of Performance
Source: Adapted from Hudson *et al.* (2001)

2.1.7 SME Performance and ICT

In this dissertation, SME performance can be improved based on adoption of ICT via SME's digital capability which is about the capability of acquiring technology, say using the e-commerce. Use of ICT technology in business-to-business (B2B) via a digital network domestically or internationally can influence the efficiency of the business. B2B relationship enhances the interaction of the enterprise with trading partners. By adopting Internet technology in business operations is a compulsory innovation that eventually affects enterprise performance (Wu *et al.*, 2003). Response rates of the business activities will be much faster and more accurate. Consequently, the SME performance will be improved through the task efficiency, which the Internet would shorten the time of trading and management time taken. E-commerce is the best option to improve the SME performance. Therefore, the research investigates the relationship between the SME performance and using of e-commerce in this study.

2.2 E-commerce

2.2.1 Evolution of E-commerce

The traditional retail business is the interaction between sellers and buyers normally face-to-face. Despite the traditional business provide that interaction, it can be observed that not everyone has the opportunity to involve in the traditional business. Distance, physical attending the shop and time availability are the limitation that prevents traditional retail business to reach out to a larger audience. E-commerce offer alternative solution for obtaining a better and effective services and products. Hence,

this section focuses on e-commerce in general that may be a good opportunity to improve the SME performance.

Commerce is the act of exchanging something valuable between two or more entities (Phatthana, 2011). For a trading to occur, there must be a minimum of two entities involved. Each of the entities must own the capacity and exercise communication and delivery where both entities can fairly and freely accept or reject the offered exchange. Each of the entities involved must be of mutual desire to deal with each other. Fundamentally, the entities involved in the trading must meet the agreed terms and conditions. When these entities agree, then the transaction occurs, the increased values of mutual benefit of all entities involved (Phatthana, 2011). By tradition, the transaction may be based on a one-to-one negotiation takes place in an environment of physical contact with the goods or services to be evaluated. This is usually in terms of money transacted between seller and buyer upon demand-supply exists.

In the early 1960s', development of e-commerce predates the Internet (Garg & Choue, 2015). However, most creative applications related to e-commerce, electronic funds transfer (EFT) was introduced around 1970s (Turban *et al.*, 2008). Later, Electronic Data Interchange (EDI) was commenced electronically, which allowed invoices or purchase orders to be available in the transaction (Turban *et al.*, 2008). Use of the Internet to manage the progress of academic and scientific research was used by the USA government in 1969 (Senn, 2000). In 1990s, the Internet and its graphical components were displayed within the HTML and allowed internal organizations to

exchange and share information (Senn, 2000). The internet was the upgrade version of EDI which is more cost-effective than the previous technology (Turban *et al.*, 2008).

Dot.com year 2000 crash incident pushed to the organizations to utilize ICT because of it able to lower costs and provide a better efficiency of systems. Nevertheless, the Internet had evolved into a system which able to facilitate B2B and B2C services. However, the growth of e-commerce contributed by B2B which B2B becoming more popular than B2C. Furthermore, the use of e-commerce has been adopted by the larger firms, while its development in SME has been observed much slower (MacGregor & Vrazalic, 2004).

2.2.1.1 ICT Sophistication Level

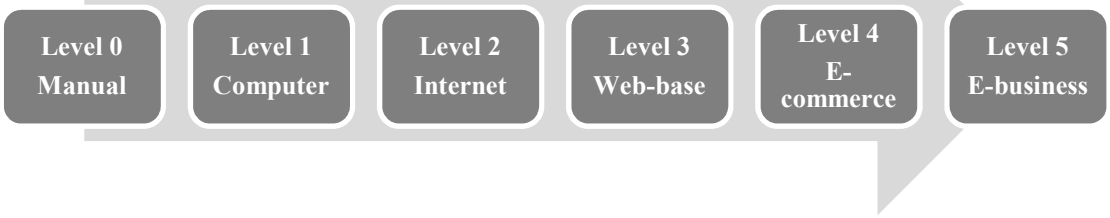

Figure 2.4
ICT Sophistication Level
Source: Adapted from Hanoum & Hardi (2015)

Hanoum and Hardi (2015) introduced the ICT sophistication level framework for SMEs (see Figure 2.4). The level of ICT usage intensity level, which incorporated in doing their businesses are listed as below:

a) Level 0 (manual application): SMEs do not adopt any ICT technology for doing businesses;
b) Level 1 (computer application): SMEs use computer and printer doing their business administration for example to print delivery order from Microsoft Word;
c) Level 2 (internet application): SMEs have equipped their computer with internet technology for example follow up with creditor via email;
d) Level 3 (web-based application): SMEs had made their company visible via websites mainly served as an information portal for example publishes their products to the internet user, using the SMSs to market their products;
e) Level 4 (e-commerce application): SMEs have been implementing e-commerce. The company website aims not only to market their companies and products, but also includes managing orders, inventory, shipment, payment gateway and handling customer relationship; and
f) Level 5 (e-business application): SMEs thoroughly utilize IT for departmental functionalities for example supplier management, customer management, inventory, GST and so on.

From the discussed ICT sophistication level above, Level 4 – e-commerce application is studied in this research whereas the respondents are the adopters who already have

the experience of using the e-commerce in improving their company performance. The selected respondents have their own website which equipped with the e-commerce ecosystem such as payment gateway, order management, shipment management and others.

2.2.2 Definition of E-commerce

E-commerce is an *effective medium* to *advertise*, *market* and *distribute* goods and information services by allowing people to buy goods and exchange business transaction information on-line (Hoffman & Novak, 1996). McKeown and Watson (1996) defines e-commerce as the *use of computer networks* to *improve organization performance* that improves profitability, gain a wider market and faster delivery of products to consumers. Nissen (1997) defined e-commerce as the *process flow* connected with commercial *transaction* or *relationship* which includes activities such as marketing, sales, customer support and purchasing.

E-commerce can be described as utilizing electronic networks to *speed up and simplify* all stages of business process from design to buying, selling and delivering (Furnell & Karweni, 1999). Mahadevan (2000) pointed out that e-commerce involves the purchasing, selling, and exchanging of goods and services with *business partners* and *buyers* over computer networks. Furthermore, e-commerce is an exchange of value between organizations and individuals in *digitized form* over the Internet (Laudon & Traver, 2002).

E-commerce conducts "transactions between two or more parties using *interconnected network*" (Kalakota & Robinson, 2003). Turban *et al.* (2008) illustrates e-commerce as "the process of buying, selling, transferring, or exchanging products, services and information via computer networks, including the Internet". It uses the technology of electronic communication to do business in creating and operate in *new and efficient ways* (Walcott, 2007) and uses the power of digital information in understanding each of the customers' *needs and preferences* (Salameh, 2015). Muhammed (2015) defined electronic commerce covers any form of *business or information exchange or administrative transaction* that is performed using any ICT.

The internet provides three business opportunities, namely linking companies supply chain directly to customers, suppliers and others; developing new products and services to customers; dominating the electronic channel of an entire industry that control access to customer and most importantly sets the *new business rules* (Ghosh, 1998). As the consequences of that Internet fast development, Turban *et al.* (2008) identified e-commerce from five different perspective, namely *from communication*, e-commerce is the exchange of information, goods, services, or payments over a computer network via electronic devices; *from business*, e-commerce is the automation of business transactions and workflow in supply chain; *from service*, e-commerce is a cost saving tool that enable firm to cut service cost to get better speed of delivery service and quality of goods; *from online perspective*, e-commerce provides digital capability to sell and purchase products and information over the network; *from community*, e-commerce is the marketplace where gathers community

members to learn, transact and collaborate.

By consolidating the definition from previous researches, *e-commerce can be generally defined as a lawfully regulated, effective and comprehensive process flow that performs advertise, market and distribute products, services and information via electronic payment through marketplace available in the internet-enabled devices that improves company performance*. Internet-enabled devices are computer, laptops, mobile phone, smart TV and so on. that equipped with electronic payable via payment gateway from a marketplace.

2.2.3 Categories of E-commerce

E-commerce metamorphoses the way of people doing businesses. Traditional face-to-face businesses performed within a premise are called as "*brick and mortar*". For businesses, which operate or run offline and online together are referred to "*click and mortar*". Businesses Transaction only carried out via Internet payment gateway are called as "*pure play*". Respondents from *click and mortar* and *pure play* are selected in this research.

E-commerce operation is classified as *front-end functionalities* and *back-end integration*. Front-end referred to interface between the seller and the buyer for example listing in marketplace, in-house search engine on e-categories, add-to-favorite/follow-up, shopping cart and payment gateway (Turban & King, 2003). Back-end referred to administration related to order placement, availability confirmation and payment

fulfillment, inventory update and shipping management. Thus, the respondents are those who are the adopters who have the experience of using the front-end and back-end operation.

E-commerce can be categorized into seven types. First, *Business-to-Business (B2B)* is a situation whereby there is a trading of products, services, or information between two business entities through their institutions. B2B e-commerce had existed for a few decades ago, but more mostly called EDI. EDI is used to be conducted directly linked to the two businesses (Giancarlo, 2000). Examples of B2B are Alibaba.com, 1688.com and so on. Second, *Business-to-Consumer (B2C)* is a type of business whereby exchanging information, products or services are done from a business institution to a consumer (Giancarlo, 2000). Examples of B2C are Amazon.com, Lazada.com and so on.

Third, *Consumer-to-Business (C2B)* is an emerging platform that allows consumers to make specific service requests from the business (Giancarlo, 2000). In short, consumers create value and businesses consume that value. C2B allows businesses to extract value from the consumers' review, blogs, comment, forum, survey poll and so on. Examples of C2B are Google Adsense, Elance and so on. Fourth, *Consumer-to-Consumer (C2C)* is said to be the earliest method of doing business online (Giancarlo, 2000). It is observed that not everyone can involve in the traditional business. C2C, or person-to-person (P2P) is explained in terms of persons engaging in business activities through web-based environments with the use of the Internet in one way or another

(Mäkeläinen, 2006). Examples of C2C are Mudah.my, Yahoo! Auction, Taobao.com, Aliexpress.com and so on.

Fifth, *Business-to-Government (B2G)* is explained as any mode of the e-commerce exchanges done between business and government. It is considered as one of the enabling systems for businesses to electronically sell to governments. Registered suppliers can also access lodge tenders and get more information about tender online. Sixth, *Government-to-Business (G2B)* is a type of business model that the business transacted between government and business entity, mainly involves government providing information or services to business organization. In general, the government uses B2G business model website to approach business organizations. The typical G2B websites support general procurement such as tenders, auctions, and application submission functionalities. Examples of G2B are PEMUDAH, SME Corp and so on. Seventh, *Government-to-Customer (G2C)* is a subset of e-governance universe which the aim of this model is to provide services to the citizen via website for example Tax e-filing, TalentCorp and so on.

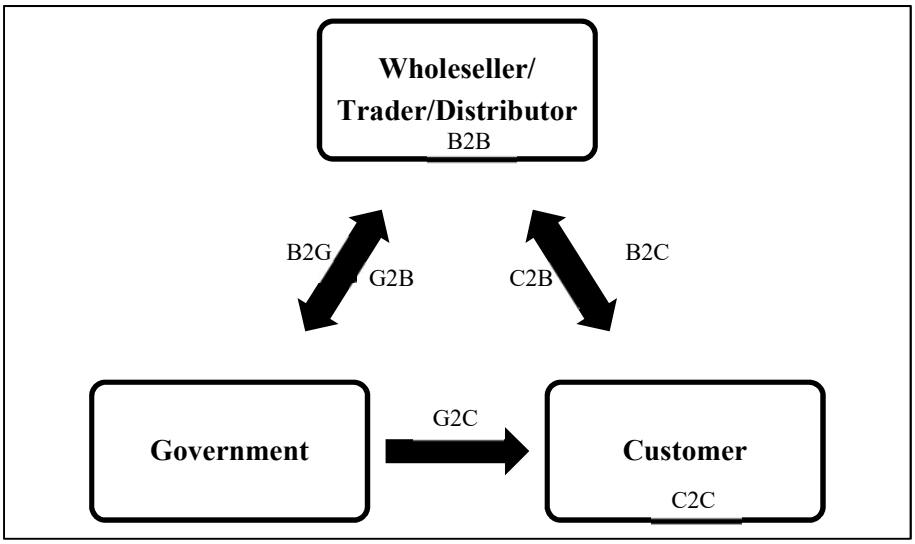

Figure 2.5
Essential Relationship between business, government and customer in e-commerce.
Source: Kalakota & Whinston (1997)

To be a member of the e-marketplace, SMEs have to submit the copy of valid SSM (Companies Commission Malaysia) registration and preferably business current account details to renew their annual status of a business seller, B2C. SMEs are required to sign the terms and conditions agreement – Seller Agreement with the e-marketplace. Thus, this research targets the business entity as its respondents.

2.2.4 Impact and Benefit of Use of E-commerce in SME

Growth of e-commerce has expanded rapidly because of e-commerce lays opportunities and benefits that are essential as a business growing tool from the current implementation by many organizations. Previous studies can be summarized that e-commerce offers geographical reach; speed in paperless business administration; higher productivity; information sharing; the cost reduction in promotion and advertising; potential savings in transaction costs; fast communication between seller and buyer;

SMEs can shorten their conventional supply chains, lessen transport obstacles and reduce delivery costs (Turban *et al.*, 2008). Thus, the use of e-commerce has contributed a variety of impacts and benefits to SME performance.

2.2.4.1 Personalization, Customization and Interactivity

A significant advantage of e-commerce is the ability to create personalization to each individual buyer. This is important because the SME seller wants to target the right product for the right customer. Take a book selling business as example, book seller wants to know what types of books that their buyers interested in based on their buyer preferences, behaviors and demographics. Three methods are commonly used to get this information from buyers.

First, book buyer can create their user profile during the log in registration. The website will collect user information for example sex, age, interest and so on. Furthermore, the website can gather information directly from the buyers by asking them to fill in a simple questionnaire or simply stating what e-newsletter information they would like to receive. Second, cookies deposition method is used to observe buyer online behaviors. Cookies, a tiny data file that deposited in the browser, can track buyers first visit or return to a seller's site that has deposited a cookie. This type of personalization is implicit because the site can track customer browsing or buying behavior without them directly participating or even knowing about it. Third, buyer information is available through the e-marketing on marketplace operator, Facebook and Google.

Data mining supplies insights into corporate by identifying user patterns and use it to predict future behavior. The prediction can be used as a guide to decision-making and forecast the effect of those decisions. Web mining techniques are used to explore meaningful and feasible trends, profiles, and patterns from Web resources. Through their advanced data mining and big data analysis, the cost of advertisement gets lower as compared with the conventional advertisement which targets the random mass. These services are provided to Lelong members to enhance their marketing to the right customers.

2.2.4.2 24-hour Global Reach

E-commerce expands the business opportunity to national and international markets. Hence, a Kedah SME can reach their customer from Labuan. Customers who have the geographical limitation are now able to order via the e-commerce. E-commerce availability of 24-hour a day, 365 days a year, makes buying a product more convenient. From a customer point of view, it is no business hours or holidays exist in e-commerce. Interestingly, customer does not need to worry about costly parking fees, toll and transportation cost. Furthermore, customer can make decision from a variety of updated product offers. Thus, placing an order is independence of time or place. For this advantage, SMEs earn equality to stand against the competitiveness from large enterprise.

2.2.4.3 Disintermediation

By using the e-commerce, SME manufacturers can market and promote their products and services directly to retail. Disintermediation defines "a strategy to remove business process layers responsible for certain intermediary steps" for example remove wholesalers, distributors or retailers in a given value chain. Direct connection between manufacturers with consumers, B2C will shorten the distribution chain. With the technology, value inefficiencies of a customer can be reduced by eliminating the middlemen can significantly lower the customer purchase costs.

For instance, initially manufacturer in 1688.com (Chinese version of Alibaba.com) targets wholesalers, distributors or retailers as their customer. High minimum order quantity (MOQ) will discourage the retail customer to buy their manufactured goods at 1668.com. Recent years, the manufacturer has revised lower MOQ to target retail customer. By selling directly to consumers, manufacturers can achieve more sales while charging higher prices to retail customers but lesser price from the distributor. Besides the price advantages, the manufacturers have a greater opportunity to influence their retail customer. The manufacturer gains better understanding of their markets, C2B because of the direct connection to retails consumers, and consumers gain better buying experience about the products through their direct relationship with the manufacturers.

E-commerce adoption has shown significant benefits realization in large corporations, especially in developed nations (Shemi, 2012). Research studies have noted e-commerce adoption that benefited large corporations, due to their wide resources at

their digital capability. As a norm, SMEs in developing countries face the issues such as lack of resources, digital competencies and political assistance to boost e-commerce adoption. Thus, resource-based view (RBV) comes into the picture of SME performance and use of e-commerce.

2.2.5 Development Scope of E-commerce

Technology-related scopes, application-related scopes & support and implementation-related scopes are scope of studies in the developing e-commerce (Ngai & Wat, 2002). First, technology-related scopes involve telecommunication, infrastructure and networking issues. Second, application-related scopes make up app-related or software-related issues such inter-organizational systems and the process integration solutions centered on the supply chain issue see Figure 2.6. Third, support and implementation scopes concern to business strategies e.g. customer retention, customer development, business growth, and value creation. Beside the financial support, government institutional issues that address and support various cyber laws related to security, cybercrimes and most significantly government policies for fostering the growth of e-commerce. These scopes provide the insights of factors which associate with the Unified Theory of Acceptance and Use of Technology (UTAUT).

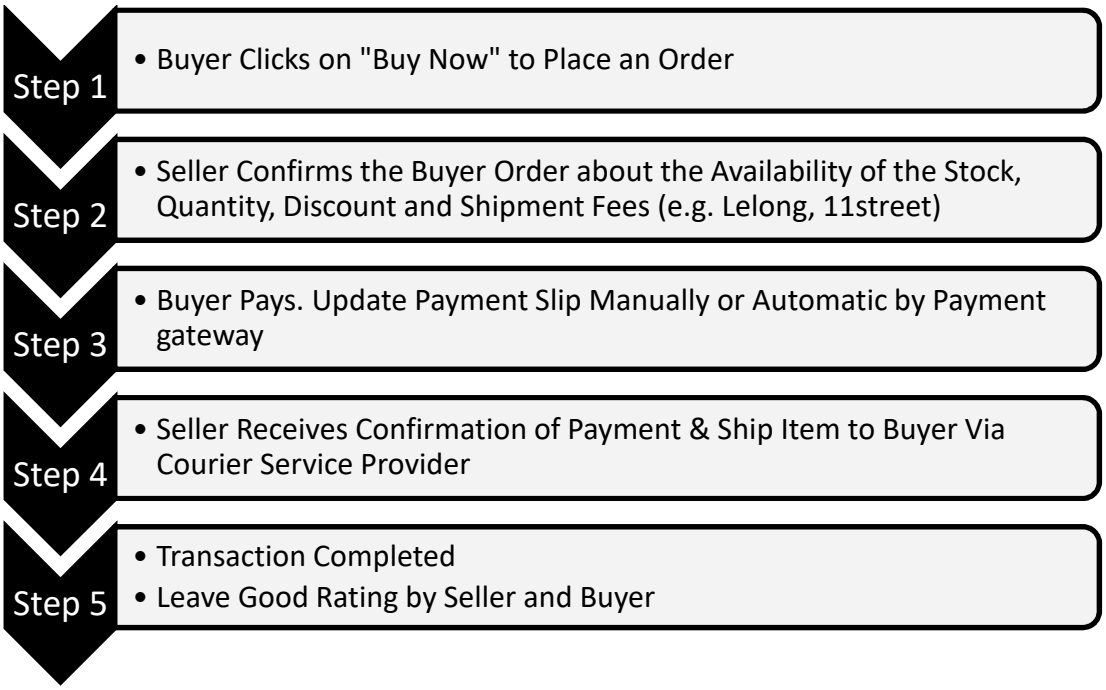

Figure 2.6
Typical Five-step E-commerce Trading Process Integration

2.2.6 Security and Privacy Issue in E-commerce

Security of web-based applications have always been a big concern by user over the Internet. An incident such as malicious virus attacks, identity theft, phishing email, data theft, password threats, and piracy could have made most Malaysian SMEs reluctant to provide sensitive information to websites. Users consider insufficient methods used for security protection, for example biometrics, electronic signatures, smartcards and digital certificates, password protection, network security applications and the inspection of web activities. This perception is a barrier to e-commerce and needs to be put at the top of the priority list. It is because SME who wants to have a competitive edge in today's global status should adopt an essential security policy in consultation

with distributors, suppliers and partners that will offer a safe atmosphere for e-commerce trading.

E-commerce privacy is reflected as "the degree of control one has over one's personal information with respect to its collection, use, and transfer by entities engaged in e-commerce" (Boritz & No, 2011). It is important to keep information in private because e-commerce frequently requires SMEs to reveal sensitive company information that must be protected prudently. Building SME user confident is an important strategy because the perceived risks strongly influence e-commerce user's intentions to transact with unfamiliar customers via the WWW. Overcoming the perceived risks leads SME to engage in the following three behaviors that are critical to the use of e-commerce marketplace: following advice suggested by the marketplace, sharing company information with the marketplace, and selling goods and services from the marketplace's website. Sharing of company information can be a discouraging task as it could involve the privacy violation issues. Though, when privacy information is made more prominent, some sellers are willing to advertise more from privacy protected marketplace. Thus, perceived risk is incorporated in the framework to study the use of e-commerce.

2.2.7 Laws Regulating E-commerce in Malaysia

These laws are directly relevant to e-commerce, which involves the transaction involves the use of the internet to perform the business activities. Mohamed (2015) pointed out that in Malaysia, among the laws which related to e-commerce are Sales of Goods Act

1957 (SOGA), Trade Marks Act 1976 (TMA), Copyright Protection Act 1997 (CPA), Communication and Multimedia Act 1998 (CMA), Trade Marks (Amendment) Act 2000, Consumer Protection Act 2006 (CPA), Electronic Commerce Act 2006 (ECA), Personal Data Protection Act 2010 (PDPA) and Trade Description Act 2011 (TDA).The TMA 1976 is for protecting the trademarks, the CPA 1997 is for copyright protection, The CMA 1998 deals with issues of blog content PDPA 2010 is meant for protection of personal data and individual privacy, and CPA 2006 deals with issues of consumer protection and fraudulent acts. Moreover, conventional laws such as Contracts Act 1950, Evidence Act 1950, Registration of Business Act (RBA) 1956, Defamation Act 1957 and Companies Act 1965 are indirectly enforced to the online businesses. Thus, these law enforcements do provide a protection platform for either e-commerce seller or buyer that potentially reduce the perceived risk.

2.2.8 E-commerce Readiness in Developing Countries

In Iran, United Kingdom and United States of America, e-commerce has been utilized as the vehicle for transforming SMEs into big companies (Chivasa & Hurasha, 2016). To use e-commerce in business, an SME needs to have the Internet to be connected to a desktop computer, laptop or smartphone. Electricity, high bandwidth internet and these devices which are common in use in developed countries but may be unavailable for many Malaysian SMEs especially in countryside areas in the developing nations. Moreover, e-commerce derivatives are only accomplished through latest ICT infrastructure e.g. location-based commerce, mobile commerce (m-commerce); cloud computing; and social network commerce (s-commerce). In a comparative study

between developed and developing countries, digital capability readiness greatly assists its SMEs to apply e-commerce in their business. Low networked readiness in most developing countries have demotivated their SMEs to use e-commerce. This research focus on the e-commerce adopters from Malaysia, respondents from a developing country.

2.2.9 Globalization, Digital Divide and E-commerce Adoption

Globalization is defined as the "increasing interconnectedness of the world through flows of information, capital and people, facilitated by trade and political openness as well as information technology" (Shemi, 2012). Globalization and the Internet have been recognized as the drivers of the use of e-commerce. However, SMEs in developing countries facing lack ICT infrastructure and other essential resources. Shemi (2012) pointed that globalization provides business opportunities as well as challenges for SMEs. SMEs in developing countries face challenges come from global competitors. The alien competitor ventures their existence into domestic markets in the developing countries. The global players gain economic appearance by expanding their fortune into new markets in the developing countries. The best example is the Korean based marketplace, 11street Malaysia. 11street introduces their Korean products from Korean SMEs in Malaysia. Digital incapability seriously affects SMEs performance to compete in global markets.

In the 90s, digital divide "describes phenomenon about the digital gap in knowledge and ICT acquisition between the developed nations and developing nations" (Shemi,

2012). In e-commerce usage, the digital divide is the technological adoption or a usage gap between rural compared with urban areas; and SMEs compared with large companies. The use of e-commerce has not shown much acceptance among SMEs in developing countries (Olatokun & Kebonye, 2010).

Researchers observed that the high mobile phone penetration in most developing nations had narrowed the gap between SMEs and large enterprise (Heeks *et al.*, 2009). The research found that SMEs were actively engaged in using mobile telephony to perform their business activities in Ghana (Frempong, 2009). Furthermore, Donner and Escobari (2010) that SMEs use of mobile phones to perform their business activities had beyond the conventional fixed line. Even though, the digital divide may still persevere in between developed and developing countries (Shemi, 2012). Resource-constrained may still be the biggest barriers for SMEs in developing nations to respond to domestic and global demand for use of e-commerce (Winch & Bianchi, 2006).

From the statistics, e-commerce is not relatively an immature technology and but it seems like it is in its early usage stage in Malaysia (ACCCIM, 2012; SME Corp, 2016). SMEs are well-aware about the existence of e-commerce, but they are in "wait and see" mode. For risk averse SMEs, they tend to act a "wait and see" approach to e-commerce usage. They wait to see the success and failures of the pioneers. If the pioneers are successful, then only they will use it. (Awiagah *et al*., 2015). Internet users are mainly intended usage for information, communication and entertainment purposes rather than

monetary transaction purposes. The usage of e-commerce has been observed slower than expected in Malaysia.

2.2.10 E-commerce in Malaysia

International Monetary Fund (2016) reported that Malaysia is ranked second highest GDP (purchasing power parity) per capita in ASEAN at USD 26,211, as compared with Thailand, Indonesia, Philippines and Vietnam at USD 16,130, USD 11,149, USD 7,282 and USD 6,037 respectively. In comparison with developing countries, Malaysian online retail sales per capita were USD 37.60 in 2015, which is between Thailand's (USD 65.20) and Indonesia's (USD 19.80). In comparison to e-commerce giant, Malaysia is still a significant laggard compared with China's (USD 444.40) and the US's (USD 1,062.90) total online retail spend per capital in 2015 (Chua, 2016).

Moreover, Retail Group Malaysia (RGM) reveals that local e-commerce merchants only capture two percent of the total retail sales market (Chen, 2017). Besides that, 11street reports that fresh local retailers face problems of "do not know how to start", perceived risk about the payment gateway and online marketing strategy. These statistics indicate that probably Malaysian SMEs still not ready to capture a larger share of total retail spend. Thus, this research is to examine the factors relate to the use of e-commerce that contributes to the SME performance.

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

Since e-commerce is a derivative of using information technology (IT) connected through networking, this research suggests that the UTAUT could be used to explain SMEs' to use the technology. UTAUT consolidates eight models of user acceptance theory which offers the most comprehensive model so far available to researchers in the IT-based universe. UTAUT, likes other using acceptance theories, is based on the concept shown in the relationship between reaction-to-use, intention-to-use, and actual-use of an ICT related application (see Figure 2.7). The influences from the reaction-to-use in the UTAUT theory will be adapted to fit the context of actual-use of e-commerce by Malaysian SMEs.

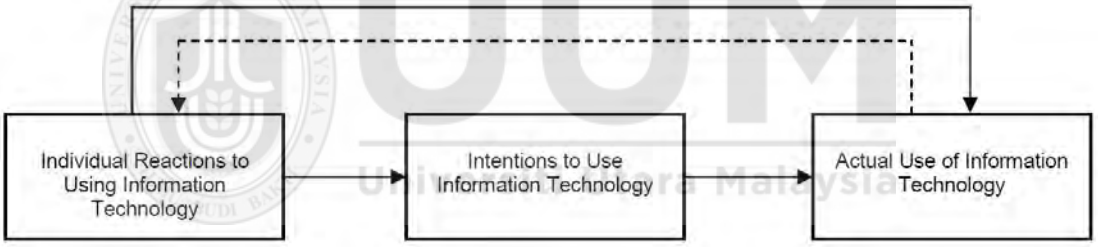

Figure 2.7
Basic Concept of User Acceptance Models – Reaction, Intention and Actual Use
Source: Venkatesh *et al.* (2003)

Prior to the unified theory, Venkatesh *et al.* (2003) observed that most researchers formulated their research framework by selecting constructs across models. This construct selecting procedure causes researchers unintentionally ignoring the contributions or constructs from other important models. Moreover, some of the constructs are repeated use in a few models. Thus, with that motivation, Venkatesh, *et al.* (2003) establish a unified theory by reviewing and synthesizing the existing models

at that time in the scope of user acceptance in a technology usage, see Table 2.5. In this research, the independence variables of UTAUT are adapted to examine the relationship with the use of e-commerce by SMEs.

As shown in Table 2.5, UTAUT captures the essence of eight established models which describes user acceptance in universal ICT application (Venkatesh *et al.*, 2003). In their findings, UTAUT able to explain 70 percent of the variance in technology usage studies, which is remarkably "a substantial improvement over any of the original eight models and their extensions". Furthermore, UTAUT's predictability – explained variable (R^2) was significantly higher than TAM3's even TAM3 was developed after UTAUT. Thus, this research adapts UTAUT as the first theory against other technology adoption model/framework because of its predictability.

Table 2.5

A Unified Theory from Eight Primary Models About an Individual to Use New IT

	Model	Contributors	Core Constructs	UTAUT IV Constructs	R^2 in Usage Intention
1	Theory of Reasoned Action (TRA)	Ajzen & Fishbein, 1975	- Subjective Norm	- Social Influence	0.36
2	Technology Acceptance Model (TAM/TAM2)	Davis, 1989	- Perceived Usefulness - Perceived Ease of Use - Subjective Norm	- Performance Expectancy - Effort Expectancy - Social Influence	0.52 (TAM) 0.53 (TAM2)
3	Motivational Model (MM)	Davis *et al.*, 1992	- Extrinsic Motivation	- Performance Expectancy	0.38
4	Theory of Planned Behavior (TPB/DTPB)	Ajzen, 1991	- Subjective Norm - Perceived Behavioral Control	- Social Influence - Facilitating Conditions	0.36-0.47
5	A Combined Technology Acceptance Model/Theory of Planned Behavior (C-TAM-TPB)	Taylor & Todd, 1995a & 1995b	- Perceived Usefulness - Subjective Norm	- Performance Expectancy - Social Influence	0.39
6	The Model of PC Utilization (MPCU)	Thompson *et al.*, 1991	- Job Fit - Complexity - Social Factors - Facilitating Conditions	- Performance Expectancy - Effort Expectancy - Social Influence - Facilitating Conditions	0.47
7	Innovation Diffusion Theory (IDT)	Moore & Benbasat, 1991	- Relative Advantage - Ease of Use - Image - Compatibility	- Performance Expectancy - Effort Expectancy - Social Influence - Facilitating Conditions	0.40
8	Social Cognitive Theory (SCT)	Compeau & Higgins, 1995a & 1995b	- Outcome Expectations	- Performance Expectancy	0.36

Note: UTAUT's explained variance is 0.70. UTAUT2's explained variance is 0.52. TAM3's explained variance is 0.35.

Source: Venkatesh *et al.*, 2003 & 2012, Venkatesh & Bala, 2008, Samaradiwakara & Gunawardena, 2014

UTAUT extracts four core factors from reaction-to-use, which impact intention-to-use and actual-use. The factors are identified as performance expectancy; effort expectancy; facilitating conditions and social influence. The definition of the constructs of UTAUT are tabulated in Table 2.5 and Figure 2.8. These factors are literately synthesized from eight usage theories, including the TRA; TAM/TAM2; MM; TPB; a model combining the TAM & TPB; MPCU; IDT; and SCT, see Table 2.6. Gender, age, experience and voluntariness of use are moderators that embodied in the UTAUT framework.

Table 2.6
Summarized Definitions of UTAUT's Constructs

UTAUT Construct	Definition
Performance Expectancy (PE)	The degree to which an individual believes that using the system will help him or her to attain gains in job performance.
Effort Expectancy (EE)	The degree of ease associated with the use of the system.
Social Influence (SI)	The degree to which an individual perceives that important others believe he or she should use the new system.
Facilitating Conditions (FC)	The degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system.
Behavioral Intention (BI)	Behavioral intention is defined as a person's perceived likelihood or "subjective probability that he or she will engage in a given behavior"
Behavioral Use (BU) or Attitude towards using technology (ATUT)	An individual's overall affective reaction to using a system.

Source: Venkatesh *et al.* (2003)

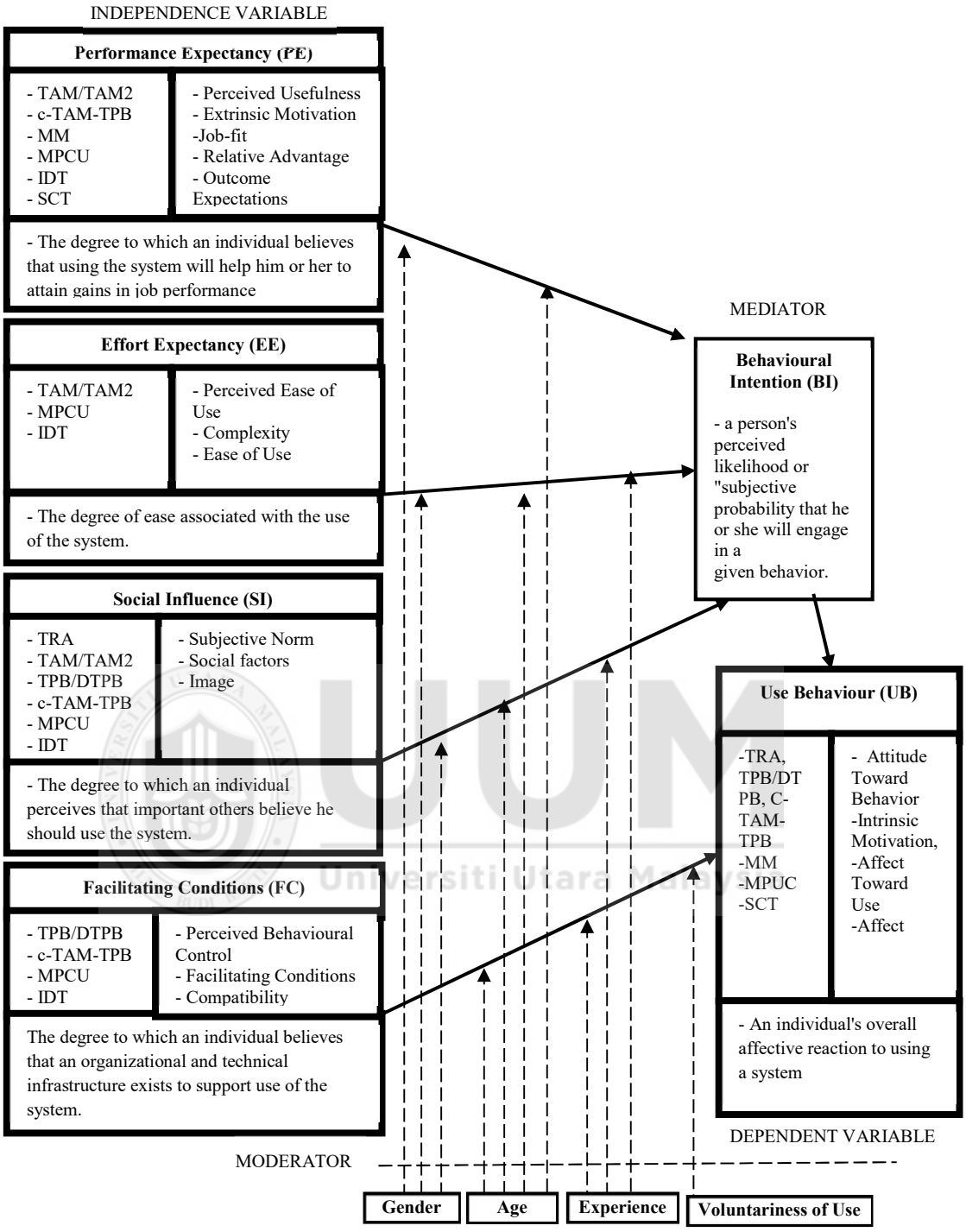

Figure 2.8
Original theories and construct definition of UTAUT
Source: Venkatesh *et al.* (2003)

2.3.1 Previous UTAUT Studies on the Internet-Based Application

UTAUT had been applied as a research framework in many areas (Pope, 2014). Previous studies on the IT artifacts acceptance via UTAUT-based model were discussed. Adam *et al*. (2016) developed the measurement model of acceptance and use of social commerce among SMEs in Malaysia based on UTAUT. Abu *et al.* (2015) modified UTAUT theory to study the adoption of technology for Malaysia SMEs in Food Industry. Indonesian researcher Indahwati and Afiah (2014) studied the prediction on the SME's intention to adopt accounting software for financial reporting in Indonesia by using UTAUT. Ndayizigamiye (2013) used a unified approach, UTAUT to study e-commerce adoption by South African SMEs. Peris *et al.* (2013) evaluated the acceptance of professional Web 2.0 Platforms in German regional SME networks using the UTAUT.

Tan *et al.* (2012) studied the effects of industry type on ICT adoption among Malaysian SMEs. Mursalin (2012) studied the information system adoption and usage by validating UTAUT model for Bangladeshi SMEs. Moghavvemi *et al.* (2011) conducted an empirical study of its innovation adoption among SMEs in Klang Valley, Malaysia. Fillion *et al.* (2011) tested ERP system in medium to large sized enterprises Canadian. Adam *et al.* (2011) verified the acceptance of enterprise resource planning (ERP) systems by manufacturing industries in South African SMEs, which concluded the constructs of PE, EE, SI and FC, affects the acceptance. In general, these studies have adapted or extended UTAUT to study the technology usage by taking SMEs as unit

analysis in their study. The relationship between the UTAUT constructs are synthesized in Table 2.7 that used to formulate the hypotheses H1-H4.

Table 2.7
Summary of Literature Synthesis from the Previous Study

Relationship	Hypothesis Supported	Hypothesis Not Supported
H1: PE-BI-UB	Lee (2009); Williams (2009); Yang (2010); Adam *et al.* (2011); Moghavvemi *et al.* (2011); Ahmad *et al.* (2012); Mursalin (2012); Cohen *et al.* (2013); Indahwati & Afiah (2014); Jaradat & Rababaa (2013); Jambulingam (2013); Ndayizigamiye (2013); Peris *et al.* (2013); Tai & Ku (2013); Serben (2014); Maillet *et al*. (2015); Mbrokoh (2015); Ahmed *et al.* (2017)	Li *et al.* (2014); Chiu & Ku (2015); Dastan & Gürler (2016)
H2: EE-BI-UB	Lee (2009); Williams (2009); Adam *et al.* (2011); Ahmad *et al.* (2012); Mursalin (2012); Cohen *et al.* (2013); Indahwati & Afiah (2014); Jaradat & Rababaa (2013); Ndayizigamiye (2013); Peris *et al.* (2013); Tai & Ku (2013); Li *et al.* (2014); Chiu & Ku (2015); Mbrokoh (2015); Ahmed *et al.* (2017)	Yang (2010); Zhou (2012); Jambulingam (2013); Serben (2014); Abu *et al.* (2015); Maillet *et al*. (2015); Dastan & Gürler (2016)
H3: SI-BI-UB	Williams (2009); Adam *et al.* (2011); Ahmad *et al.* (2012); Mursalin (2012); Indahwati & Afiah (2014); Jaradat & Rababaa (2013); Peris *et al.* (2013); Tai & Ku (2013); Li *et al*. (2014); Serben (2014); Maillet *et al*. (2015); Mbrokoh (2015); Yueh *et al.* (2016); Ahmed *et al.* (2017)	Cheah *et al.* (2011); Gagnon *et al.* (2012); Jambulingam (2013); Ndayizigamiye (2013); Cohen *et al.* (2013); Chiu & Ku (2015);

Table 2.7 (Continued)

H4: FC-UB	Williams (2009); Yang (2010); Adam *et al.* (2011); Ahmad *et al.* (2012); Mursalin (2012); Cohen *et al.* (2013); Indahwati & Afiah (2014); Serben (2014); Chiu & Ku (2015); Yueh *et al.* (2016); Ahmed *et al.* (2017)	Fillion *et al.* (2012); Jambulingam (2013); Jaradat & Rababaa (2013); Ndayizigamiye (2013); Peris *et al.* (2013); Li et al (2014); Maillet *et al*. (2015); Mbrokoh (2015)
H5: PR-BI-UB	Featherman & Pavlou (2003); Dinev *et al*. (2006); Azam & Quaddus (2009); Lee (2009); Luo *et al.* (2010); Wessels & Drennan (2010); Cheah *et al.* (2011); Zhou (2012); Tai & Ku (2013); Lai *et al*. (2014); Thakur & Srivastava (2014)	Wang (2008)
H6: UB-SP	Zhu & Kraemer (2002); Zhu (2004); Al-Dmour & Al-Surkhi (2012); Azeem *et al*. (2015); Mohammed (2015); Popa & Soto Acosta (2015); Gregory *et al*. (2017); Macchion *et al*. (2017)	

Note:
PE: performance expectation; EE: effort expectation; SI: social influence; FC: facilities condition; BI: behavioral intention; UB: use behavior; PR: perceived risk and SP: SME performance.

2.3.2 Limitation of UTAUT

Although UTAUT is an improvement over the earlier theory, model or framework, Venkatesh *et al.* (2003) recognize of its limitations. UTAUT have attempted to integrate the best of eight theories, model or framework, but the construct of perceived risks is not included in their consideration, especially the technology consists of financial transaction (Tai & Ku, 2013). Thus, the construct of perceived risk is introduced into the research framework.

2.4 Perceived Risk

According to the Luo *et al.* (2010) and Hsu *et al.* (2011), perceived risk is widely considered to be a critical barrier to financial services usage. Risk can be seen as in potential insecurity sourcing from key-in data errors, software crashed, connection instability, and privacy loss. Moreover, Internet crimes such as Internet hacking and threats, SME managers may notice that an unauthorized access to their financial related accounts and cause serious monetary loss. As the result, SMEs may decide to give up the possible benefits of using e-banking whereas the e-banking as one of the payment methods for the e-commerce.

As shown in Figure 2.9, in the context of e-commerce payment, SMEs perceive risk from several facets such as security risk, economic risk, and functional risk is studied as the sub independent variable of perceived risk (Featherman & Pavlou, 2003 and Forsythe *et al.*, 2006; Tai & Ku, 2013). Thus, the construct of the perceived risk in the research incorporates the measurement of security risk, economic risk, and functional risk.

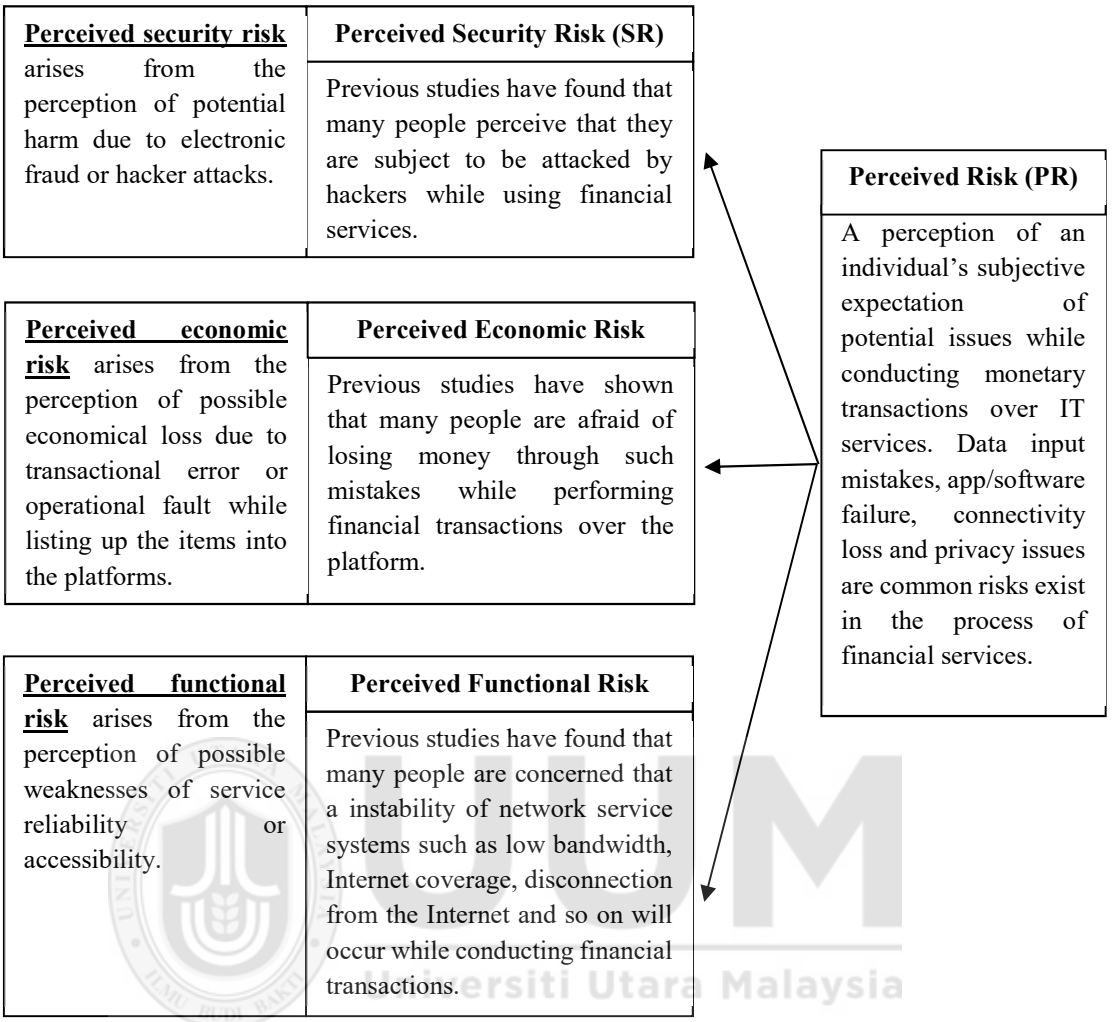

Figure 2.9
Consolidated perceived risk from security risk, economic risk and functional risk
Source: Forsythe *et al.* (2006)

First, *perceived security risk* (SR) exhibits the degree of perception of potential loss due to cybercrime attacks and threats. Previous studies have noted that SMEs perceive that they are subject to be attacked by hackers while using electronic financial services (ACCCIM, 2012; Wessels & Drennan, 2010; Tai & Ku, 2013; Sharma & Kurien, 2017). Second, *perceived economic risk* (ER) exhibits the degree of perception of potential economic loss due to transactional error or operational fault while listing up the items

into the platforms. Previous researches had shown that individuals were afraid of financial loss through such mistakes while performing financial transactions (Luo *et al.*, 2010; Tai & Ku, 2013). Third, *perceived functional risk* (FR) exhibits the degree of perception of the potential weaknesses of service accessibility or reliability. Previous reports had found that individuals were concerned that instability of network service systems such as low-bandwidth, Internet coverage, disconnection from the Internet and so on. would occur while performing financial transactions (SME Corp, 2016; ACCCIM, 2012; Wessels & Drennan, 2010; Tai & Ku, 2013).

2.4.1 Previous Perceived Risk Studies on the Internet-Based Application

Perceived risk had been applied as a research framework in many areas, especially in finance industries. Previous studies had found that use e-commerce affected by their perception of risk were discussed. Jambulingamis *et al*. (2016) reported perceived security risks decrease the likelihood of Malaysian SME to venture themselves into Facebook commerce. Ali *et al*. (2015) identified perceived risk could be the causal factors for poor e-commerce adoptions by Malaysian travel agents. Thakur and Srivastava (2014) integrated perceived risk in the usage intention across customer groups for mobile payment services in India. Tai and Ku (2013) proved that perceived risk discouraged stock investors to adopt mobile stock trading. Chong *et al.* (2013) simulated the relational study between B2B e-marketplace and e-business performance by moderating demographic characteristic, perceived risk and online data security in the NK simulation model.

Le *et al.* (2012) found that perceived risk negatively supports in their study of e-commerce adoption by Vietnamese SMEs. Syed and Shaikh (2012) stated perceived risk worked negatively for adopting e-commerce by SMEs in Pakistan. Al-Dmour and Al-Surkhi (2012) pointed out that hacking and low-level of security was the major perceived risk affecting SMEs adopt Internet-based information system in B2B in Jordan. Azam and Quaddus (2009) studied perceived risk in affecting the adoption of e-commerce by SMEs in Bangladesh. Looi (2004) qualitatively pointed out that Brunei non- e-commerce-adopters felt that their customers lacked the trust for e-commerce and refused to conduct purchases or payment online while some felt that their products information and prices were confidential and would not reveal to their competitors. In general, these researches have studied perceived risk in the technology usage by taking SMEs as unit analysis in their study. Thus, the relationship between the perceived risk and use of e-commerce are synthesized in Table 2.7 that used to formulate the hypothesis H5.

2.5 Resource-based View (RBV)

The resource-based view (RBV) argues that the use of e-commerce is determined by the availability of firm capital, human capital and physical assets (Chivasa & Hurasha, 2016). The RBV theory is first proposed in the Penrose (2009) work who argued that "a firm is a collection of the productive resources of a wide range of strategic management topics" (Shamsuddin, 2014). RBV theory emphasizes strategic choice charging the firm's managerial with the important activities of identifying, improving, developing, and deploying key resources to capitalize on business returns. Thus,

resources influence firm performance (Conner & Prahalad, 1996). Competitive advantages of a firm can be derived from the availability of resources that are valuable, unique, and difficult to initiate (Garud & Kumaraswamy, 2005). Firms can generate a sustained competitive advantage when the firms' resources are valuable, rare, imitable, and organized (VRIO framework) (Barney, 1991).

According to RBV theory, a business was developed from resources and capabilities owned by a company (Dollinger, 2008). Resources such as "anything that could be thought of as strength or a weakness of the firm" was used in analyzing ICT potentials in the 90s (Mata *et al.*, 1995). RBV is about the administration of core competencies that give a workforce its capability to maintain an organization's competitive advantage (Hamel & Prahalad, 1991). Barney (1991) explained RBV has concentrated on the making of unique resources in organizations since its beginning. The unique resources are developed over some time and explain the diversity of organizations. It provides protection from copycats and ultimately result in better performance.

Recent studies related to RBV accept that competitive advantage emerges from organizational capacities (Barney, 1991). This perspective recommends that competitive advantage and performance results are an outcome of firm-specific resources and capabilities. One of the most effective means of achieving competitive advantage is by using the organization's "competencies" or "capabilities". In this research, resources and digital capability of using the e-commerce by SMEs will determine the SME performance.

2.5.1 Resources, Capabilities and Competencies

Resources are tangible assets like cash, equipment, plant, inventory, machinery and so on which are captured in the balance sheet of a company. It also consists of intangible assets such as human capital, brand name, skills, copyright, patents, and so on that non-physical that cannot be captured in the balance sheet. Business *capabilities* refer to the things that the firm does well in what are able to meet the target setting, for example, ability to develop new products, ability to execute projects within time, budget and zero accident, and capable to retain customers from external challenges. *Competencies* are the routines, capabilities or patterns of action that well-fitted to the process that consistently making performance. It must add value to the organization that difficult to be replaced; difficult for competitors to reproduce or replicate; and be immobile across firm boundaries (Barney, 1986).

2.5.2 Core Competency Development

The core competencies are integrated of skills, specific process or technologies as said to competitively unique which contributes to customer perceived value and able to provide an admission into new markets (Hamel & Prahalad, 1991). Thus, core competencies as defined above certainly provide a major competitive advantage to the company. Core competencies in a company can be observed from its functional areas; digital capabilities; competencies in technologies; skills and resources; employee skills and learning and value systems of the firm. Core competencies also include the special departmental role, such as sales and marketing competence; technology; R&D competence; finance and accounting competence; production and manufacturing

competence; and legal competence. Lastly, organizational culture could also be a core competency that sustained competitive advantages.

Core competencies can be seen from two major perspectives, namely knowledge base and skill base. For continuing development and application of fresh competences that required sustaining competitive advantages, an iteration of repeated performing and learning – on-job-training and recertification will enhance knowledge and enrich the core competences. This may give an explanation that why companies are being continuously seen to develop their core competencies portfolios.

Core competencies must add to the customer's perceived value and provide an admission into new markets (Hamel & Prahalad, 1991). This influential relationship is the fundamental of how a company formulates the firm's strategy and value. A value which critical to targeted customers is what the core competencies they need to develop and continue to improve. They can define the target core competency, evaluate their existing competencies, analyze the gap between target and core, then leverage these competencies toward the targeted core competency. Finally, continuous improvement via the iteration of training is executed to strengthen the core competency.

Besides that, superior competences also strengthen the firm's capability to act on the awareness about competitor activities. This competence develops their competitive advantages. Organizational learning in the resource market and product market will help companies find new profitable opportunities by building a new competency;

improve and further leverage existing competency; reposition strategic positioning that adapts to effectiveness. Resource market is learnt from suppliers, human capital, investors and debtors while product market is learnt from dealers, customers, competitors and partners. Thus, SME who develops digital capability from its resource to use the e-commerce will produce performance. In short, core competency development produces performance.

2.5.3 Types of Competency

Wang and Lo (2003) categorized core competencies into three types, namely technological, market and integrative. *Technological competences* are the competence in using the technology as an asset to increase firm's profitability and achieve competitive advantage. Technology improve their business processes and decrease cost. Thus, it has increased a firm's business performance. However, it seems that the SME which lack of resource in use of e-commerce does influence their performance.

Market competences are defined as the processes designed to apply the firm's resources to create value in its services and products that meet the competitive customers' expectation and demands. They are based on the customer's preferences.

Integrative competences present the capability of integrating strengths, information, experiences and knowledge essential to develop products or services for the targeted customers. It operates the best-known method that generates new applications from existing knowledge and guide the problem-solving approaches that form the new

integrated core competence. Thus, integrative competences contribute the right strategy to core competencies because it is the most customer-oriented.

2.5.4 Use of E-commerce and SME Performance

RBV highlights that absorptive capacity indicates the firm ability to transform resources into organizational performance (Malhotra *et al.*, 2005; Zhu & Kraemer, 2002). Absorptive capacity and innovation ability of a firm influence a company's ability to perform successful change (Cohen & Klepper, 1996).

Even though most of SMEs have their own unique service or product, they do not have the essential capability of resources that can create and sustain competitive advantages. To enable a unique service or product to be facilitated into the customer's choice of products, there is a need for an SME to have the digital capability in using the e-commerce which expected to influence the SME performance. RBV theory was used to link use of e-commerce and firm performance (Zhu, 2004). TOE framework and the RBV theory were integrated in assessing E-business usage and value creations (Zhu & Kraemer, 2005). Their results showed that e-commerce had improved firm performance by creating value. Thus, this research integrates UTAUT and RBV theory to study using the e-commerce may improve firm performance.

2.5.5 Previous RBV Studies on the Internet-Based Application

RBV had been applied as a research framework in many areas. Previous studies had found that the SME performance was affected by the use of e-commerce. Gregory *et al*.

(2017) showed evidence that, in the view of RBV, specialized e-commerce marketing capabilities positively enhance degree of distribution and communication efficiency, which in turn led to enhance export venture market performance. Macchion *et al*. (2017) revealed that use of e-commerce in international fashion products improves innovation performance but has no significant relationship with business and operational performance. Popa and Soto-Acosta (2015) showed that use of e-business by SMEs contributed positively link to firm performance through organizational innovation in Spanish SMEs.

Ma *et al.* (2015) carried out their research on performance and E-business Strategy in SME's based on dynamic competitive ability; Bi *et al.* (2015) conducted an empirical study on Australia IT and fast growth SME performance; Aziz and Samad (2016) studied innovation and competitive advantage with the moderating effects of firm age in foods manufacturing SMEs in Malaysia; Al-Dmour and Al-Surkhi (2012) indicated that use of internet-based information system had direct and positive relationship to company performance. Ramanathan *et al.* (2012) focused on the impact of e-commerce on Taiwanese SMEs in marketing and operations effects; Kamyabi and Devi (2011) studied the impact of accounting outsourcing on Iranian SME Performance from RBV perspectives; and Aranyossy (2013) conducted research on e-commerce productivity paradox evidence from the Hungarian retail sector. In general, these studies have studied the performance affected by the innovative technology usage by taking SMEs as unit analysis in their study. Thus, the relationship between the use of

e-commerce and SME performance are synthesized in Table 2.7 that used to formulate the hypothesis H6.

2.6 Research Variables

2.6.1 Dependent Variable

2.6.1.1 SME Performance (SP)

The dependent variable, *SME performance* (SP) is the variable of primary interest to the researcher. It is an objective of understanding for explaining the prediction in this study. The research analysis could possibly find relationships or answers to the problem statement in Chapter One.

SME performance similar to business performance, which refers mainly to three Es management model for example SME achievement of the goals of economy, effectiveness and efficiency (Brewer, n.d.). In the three Es management model, 1) economy measures financial performance in profit and sales, 2) efficiency measurable return on equity (ROE) or return on assets (ROA), and 3) effectiveness measures accomplishment of an assignment against the resource used. It has been recognized as a crucial element to support decision making of the organization (Neely *et al.*, 2002). These characteristics will be further elaborated in chapter three by adopting items from Mohd Rosli *et al.* (2012) and Shamsuddin (2014).

From resource-based view (RBV), firm performance and competitiveness can be archived if the firm possess tangible or intangible resources that are VRIN for example

valuable, rare, inimitable and non-substitutable (Barney, 1991). If a SME strategizes the use of e-commerce from the perspectives of VRIN, SME will be able to build and sustain its competitive advantage and improve its performance against the challenges from the larger enterprise.

Performance is a complicated notion in terms of definition and measurement (Denan *et al.*, 2012). According to Jarvis *et al.* (2000), SMEs focus efforts exclusively on the financial perspective in terms of performance measures on the cash flow matter. Vast of previous studies solely considered the financial aspect was a critical dimension of performance (Jamil & Mohamed, 2011; Kumar & Nirmala, 2015). However, by focusing efforts exclusively on the financial perspective, it introduces significant disadvantages (Shamsuddin, 2014). Thus, non-financial perspectives such as labor productivity, customer satisfaction, customer loyalty and growth of machines or worker are proposed as the item in the SME performance measurement.

Performance measures that are classified as either financial or operational would underline the importance of all major businesses in evaluating and modifying performance measures, in order to adapt to the rapidly changing and highly competitive business environment (Kennerley & Neely, 2002). Moreover, measuring SME performance is an important tool to evaluate the effectiveness of a firm's strategy. Derived from these, the performance of the company would show how efficient and effective is the use of e-commerce as a mediating variable in this research.

2.6.2 Mediating Variable

2.6.2.1 Use of E-commerce (UE)

Attitude towards using technology (ATUT) is defined as an overall enjoyment and pleasure to use a technology (Davis, 1989; Thompson *et al.*, 1991; Taylor & Todd, 1995a) and an individual's delight or aversion to using a technology, influence his future technology acceptance (Zolait *et al.*, 2009). ATUT or use behavior (UB) is defined as "an individual's overall affective reaction to using technology" (Venkatesh *et al.*, 2003). Hence, *use of e-commerce* (UE) is defined as an individual's overall affective reaction to using thee-commerce technology.

An individual's evaluation determines his or her ATUT (Fishbein & Aizen, 1980). Rogers (2010) highlighted innovation perceptions such as complexity and compatibility that were essential to improve user attitude. Adopters are aware of their interests and needs as they seek enjoyment by using an appropriate technology (Bhattacherjee, 2001). Users would enjoy more using a technology if they were able to access the information and services freely.

Four constructs from the primordial UTAUT models which are attitude toward behavior (TRA, TPB/DTPB, C-TAM-TPB); intrinsic motivation (MM); affect toward use (MPCU) and affect (SCT), are explained with the same definition of ATUT (Venkatesh *et al.*, 2003). Items from use behavior construct in UTAUT will be adapted to suit the e-commerce testing environment.

2.6.3 Independent Variables

Use of e-commerce factors can be expressed that inhibit or motivate the use of e-commerce in doing their businesses. This research adopts a five-dimension framework for evaluating the factors affecting the use of e-commerce. Four factors have been adapted from UTAUT model and one factor is a standalone perceived risk construct. According to Venkatesh *et al.* (2003), the process by which firms adopt and use the innovations is related by factors, namely the performance expectation, effort expectation, social influence, facilitating conditions. Additionally, the factors perceived risk cannot be ignored when a process which involves a financial transaction.

2.6.3.1 Performance Expectation (PE)

Performance Expectancy (PE) measures the "degree to which an individual believes a system or an application enhances his or her performance at work". User's perceptions of a system's usefulness, instrumentality, job-fit, relative advantage and outcome expectations determine whether the system is in use. According to most researchers, PE has the strongest impact on BI and usage behavioral (UB).

Venkatesh *et al.* (2003) defined PE as the "extent to which individuals believe that utilizing a certain information system will help to improve their performance". Items from PE construct in UTAUT which measures five aspects in perceived usefulness, extrinsic motivation, job-fit, relative advantage and outcome expectations, will be adapted to suit the e-commerce testing environment.

a. Perceived Usefulness of Use of E-commerce

The perception of usefulness which benefits to be consequential from e-commerce adoption and use are another factor that is cited in literature. Most Malaysian SMEs are not aware of what an e-commerce can do for their business. It could be due to inadequate publicity and sometimes ignorance. Moreover, they perceive that the usefulness of the e-commerce before actually using it, is somewhat challenging.

b. Skeptical about Performance of Use of E-commerce

There is the evidence of developing countries SME managers prefer to conduct the business in face to face rather than using the ICT for example e-payment, web-enable technologies, and so on. (Shemi, 2012). Cash-on-delivery (CoD) is preferred by the seller and buyer. The seller believes that receiving cash is a better method rather than the money being held by the payment gateway while buyer believes that they can immediately respond about the item's condition. Clarification and rectification of the product issue can be immediately discussed on the spot. CoD fulfills the primary objectives of both of the parties. Both parties are skeptical about on what the e-commerce can perform.

2.6.3.2 Effort Expectation (EE)

Effort expectancy (EE) measures the degree of ease associated with the use of the system. EE measures the effort required to understand and utilize a system or an application appropriately. EE is an important construct both in mandatory and voluntary

settings. EE is moderated by gender, age and experience. It impacts stronger on older people, women and those with limited experience (Venkatesh, *et al.*, 2003).

Venkatesh *et al.* (2003) defined effort expectancy (EE) as the extent to which individuals believe that learning to use a certain ICT will not require significant effort. EE for using an ICT-based system is a significant precursor to the BI to use the ICT-based system (Venkatesh & Morris, 2000; Wang *et al.*, 2009, Li *et al.*, 2014). Items from EE construct in UTAUT which measures two aspects in complexity and perceived ease of use, will be adapted to suit the e-commerce testing environment.

a. Complexity of Technology to Use E-commerce

The complexity of e-commerce can be considered an explanatory factor affecting the use of e-commerce by Malaysian SMEs. Azam & Quaddus (2009) pointed out that perceived complexity by Bangladesh SME perceptions of more Complexity led to lower adoption intention of e-commerce. This implies that SMEs perceive conducting business through online with high complexity.

b. Complexity of GST Compliance to Use E-commerce

In the present day, e-commerce retailers are required to collect Malaysian goods and services tax (GST) on Malaysian government's behalf. As such the compliance imposes considerable costs due to the complexity process and ICT infrastructure which newly incorporated into the business processes. GST on e-commerce transactions could discourage buyers from purchasing goods and services over the Internet. The proper

timing of taxing on e-commerce transactions shall not to excessively discourage e-commerce development and economic growth (Luna & Law, 2001).

c. Ease of use in E-commerce

The education level of the owner/manager is essential to drive e-commerce activities in their firm. Sarosa and Zowghi (2003) discovered that education level becomes one of the criteria for successful use of e-commerce amongst Indonesian SMEs. Many SME managers do not appreciate lifelong learning for their business and personal development (Walker *et al.,* 2007). Most Malaysian SME owner/managers, especially in suburban area, are unable to communicate in English. Thus, it could be a barrier for them to understand the ease of use of the e-commerce. Once the management appreciates the perceived ease of use associated with the use of e-commerce, they will tend to run with the idea.

d. Language Barrier

Past study had brought up that language barrier hinders numerous individuals in developing nations from taking an interest in e-business (Daviy & Rebiazina, 2015). E-commerce applications are invented from the Western countries with English as the main language thus the inventors underestimated that SMEs in various parts of the world should consequently comprehend the language that may not be materialized in different contexts. Daviy & Rebiazina (2015) highlighted language barrier was one of the obstacles of e-commerce market growth in Russia. They pointed out that SMEs had the communicating issue with suppliers and partners.

2.6.3.3 Social Influence (SI)

Social impact (SI) measures the degree to which an individual sees that others believe that he or she ought to utilize the new system. It has been proposed that UB is impacted by the impression users believe they will provide for others by utilizing or not utilizing a specific innovation. In addition, Venkatesh *et al.* (2003) defined social influence (SI) as the "extent to which individuals perceive that their peers expect them to use a certain information system." This construct suggests that individual acceptance of a technology is impacted by whether they believe their peers expect them to reject or follow certain behaviors. Items from SI construct in UTAUT which measures three aspects in subjective norm, social factors and image, will be adapted to suit the e-commerce testing environment.

a. Owner/Manager Characteristics

The significance of the owner/manager competency is highly recognized in the use of e-commerce amongst SMEs (Looi, 2004; Kiplangat *et al.*, 2015; Lim *et al.*, 2016). Owner/manager are the ultimate decision maker, which considering the overall firm direction; installing new e-commerce facilities, whether the firm must think about to use the e-commerce or not; and their attitude towards appreciation or non-appreciation of e-commerce.

Owner/manager is the key driver of all business responsibilities in the company. The challenge comes when the manager is skeptical about the outcome of the use of e-commerce and unwilling to push for the use of e-commerce. Thus, a dedicated SME

owner/manager usually launches the business transformation to develop the SME further (Karakaya & Shea, 2008). SMEs owner/manager who does not show appreciate to the importance of e-commerce, then their business growth will probably be affected. Previous studies have further indicated that the owner/manager attitudes and perspectives towards use of e-commerce, play an essential role in the digital capability development.

b. Social Factor

Social factors surround owner/manager may influence their behavior in taking decision. Similar to an individual, SMEs also tend to easily be influenced by their social settings. In Hanoum and Hardi (2015) study at Indonesia, social factors have significant contribution of SMEs managers in deciding to use the e-business.

SMEs need to create and develop a durable business partnership. This win-win mechanism works great if the business partner perceives the strategic value and competitive advantage that can convey the benefit together. In a United Kingdom SMEs study, Wilson *et al.* (2008) found that supplier or customer demand is a critical driver to SME performance that will require the use of e-commerce. For instance, in the B2B marketplace, business relationships between sellers and buyers can be improved for use of e-commerce which enhancing the opportunities growth each party.

2.6.3.4 Facilities Condition (FC)

Facilitating conditions (FC) measures the degree to which an individual believes that his or her technology usage is supported by the internal or external organization. FC does not have significant influence on BI due to the fact that this effect has been theorized to be captured by the EE (Venkatesh, *et al.*, 2003). Moreover, UTAUT proposed that FC influence UB directly without it being mediated by BI. Items from FC construct in UTAUT which measures three aspects in PBC, FC and compatibility, have been adapted into the research framework to suit the e-commerce testing environment.

a. Level of ICT and E-commerce Knowledge

A sufficient level of ICT knowledge can drive and promote the SME to use the e-commerce that affecting their business performance. However, in comparing the availability of resources, SMEs in developed countries have a better knowledge of e-commerce. In Malaysia, a low computer literacy level amongst SMEs is common, which makes it difficult for owner/managers to comprehend the e-commerce opportunities from the market. Thus, training about the use of e-commerce shall be facilitated to clear the insufficient knowledge in e-commerce.

Successful adoption of e-commerce in business requires qualified staffs that are knowledgeable about the technical aspects of e-commerce (Rehman & Alam, 2016). However, some employees lack education and knowledge of e-commerce system requirement. Therefore, there is a need for employees to undertake additional training.

Unfortunately, SMEs attempt to save training costs by putting a stop on e-commerce adoption. In fact, there are some SMEs that hold that employees will leave once they gained knowledge or skills in e-commerce. The government should invest in education to harvest the potential benefits of e-commerce by organizing forum, giving seminar, motivation and training classes about e-commerce, such as online transaction, electronic advertising, and electronic marketing (Rehman & Alam, 2016). The more aware the companies have about e-commerce, the more companies willing to adopt e-commerce.

b. Essential Infrastructure and Skill to Develop E-commerce

Generally, SME managers would only invest infrastructure in a very basic level, which sufficient to run the daily business operation. It was understandable that e-commerce set-up cost was perceived as expensive. However, it would not be a surprise that the manager did not aware about the availability of free-listing-marketplace for example Ensogo, Shopee, and so on provides the inexpensive ways of accessing domestic markets. These infrastructures require skill ICT personnel in assisting the deployment the essential set up to feature their product in the marketplace. Skilled ICT personnel were important either he or she was within the firm or from outsourcing firms. As such, skilled ICT personnel were well-trained professional who able to facilitate the e-commerce online.

c. Government Role in Law Making

Government's role as a lawmaker has catalyzed the development of e-commerce. An example of government facilitating the policy is improving essential infrastructure; supporting in technological and financial assistance; and enacting favorable e-commerce laws (Shemi, 2012). For instance, the Singapore government had taken steps to enact favorable e-commerce laws and improve e-commerce infrastructure.

d. Government Role in Financial Support

Development in e-commerce, especially in SMEs required financial resource to set-up, buy necessary ICT equipment, upgrade existing facilities, payment to consultancy fees and train ICT personnel. In most developing nations, it is observed that SMEs have limited financial resources and digital capability to invest in ICT infrastructure. Lim *et al.* (2016) indicated that variable government supports were found significant to SME use of e-commerce. Government plays important roles to facilitate e-commerce, similar to other developing countries, the government catalyzed use of e-commerce via formulating special government's tax incentive to SMEs, encouraging foreign platform to set up a marketplace with lower charges, approving rules and regulation, launching training to SMEs manager and staff, providing SME loans to qualified online seller and so on.

e. Government Role in Infrastructure Support

Fast development of e-commerce in developed countries is observed because of their government is efficient in providing ICT infrastructure for e-commerce. In many

developing nations, the stability of the Internet greatly influenced the development of the use of e-commerce. Akamai (2016) reported that state of internet in Malaysia with the average Internet connection speed 6.4 Mbps (0.8 MByte/s, HDD read or write: 70 MByte/s) measured in the first quarter 2016, ranked 74 globally. Sadly, the slow speed of Internet discouraged the product to be presented in interactive material for example YouTube, virtual reality. It does not motivate or facilitate use of e-commerce, neither seller nor buyer, especially the picture had to be shown in high-resolution. Another barrier affecting the use of e-commerce is the stability of power supply to operate ICT equipment in the rural area. Lack of electricity supply at rural areas for example Sarawak and Sabah could stop the use of e-commerce development in that region.

2.6.3.5 Perceived Risk (PR)

Security, privacy, and trust are critical to the use of e-commerce. Perceived risk was widely studied as one of the critical factors in the use of e-commerce (Triandiri *et al.*, 2013; Ochola, 2015; Jambulingamis *et al.*, 2016). Three risk dimensions which are security, economical and functional risk are proposed for the PR. PR is the "perception of uncertainty and adverse consequences resulting from a given activity" (Forsythe *et al.*, 2006); the scale of gains and losses that one may expect with respect to achieving a specific outcome and the confidently allow somebody (Wu & Wang, 2005) or something to believe about the possibility of gains and losses (Pavlou, 2003; Warkentin *et al.*, 2002). E-commerce may be connected with a negative perception that is not found in the more traditional trade. In this discussion, financial transactions which related to electronic data interception, data entry errors, and instability of data

connections. People perceive several risks are functional, security, and economic risks. Items from the construct SR, ER and FR are proposed for the PR construct, will be adapted to suit the e-commerce testing environment.

2.7 Chapter Summary

Despite many studies that have researched on the factors of use of e-commerce in SMEs, few have essentially integrated further into the factors that affect the use of e-commerce and their association with the SME performance. Previous studies have shown that use of e-commerce supported SME performance (Aziz & Samad, 2016; Baker *et al.*, 2015; Bi *et al.*, 2015; Ma *et al.*, 2015; Ueasangkomsate, 2015). Previous studies have shown that perceived risks, effort expectancy, performance expectancy, facilitating condition and social influence related to SME use of e-commerce (Abu *et al.*, 2015; Indahwati & Afiah, 2014; Ndayizigamiye, 2013; Chong *et al.*, 2013; Peris *et al.*, 2013). Finally, SME performance will be influenced as use of e-commerce in their firms and that relates to the impact of factors such as perceived risks, performance expectancy, effort expectancy, social influence and facilitating condition. The next section discusses methodology aspects of research framework development, hypothesis formulation and variables operationalization.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology employed by the researcher to test the hypotheses of this study. There are several elements that need to be attended in the research methodology as they will assure the credibility of the findings of this study. Thus, this chapter is organized into several sections, beginning with a description of the research framework that provides an overview of the research dimension and scopes, followed by hypothesis development that presents the hypotheses of investigation; the conceptualization of variables which explains of the variables involved. These are then followed by the research approach and explanations on the sampling method, questionnaire development and data collection methods. Finally, this chapter concludes with a summary of this chapter.

3.2 Research Framework

As this study examines factors determining the use of e-commerce, variables that influenced SME performance were quantified and measured. As shown in Figure 3.1, a proposed framework has been developed to represent the hypothesized interrelationship among the variables. The proposed framework of this research is based on the UTAUT, RBV and perceived risk. The UTAUT, RBV and perceived risk build a foundation for the proposed framework which represents the network of dependent, independent, and mediator variables in examining the factors determining the use of e-

commerce and how the use of e-commerce influence SME performance through considering the on direct and indirect effects of these relationships through the PLS.

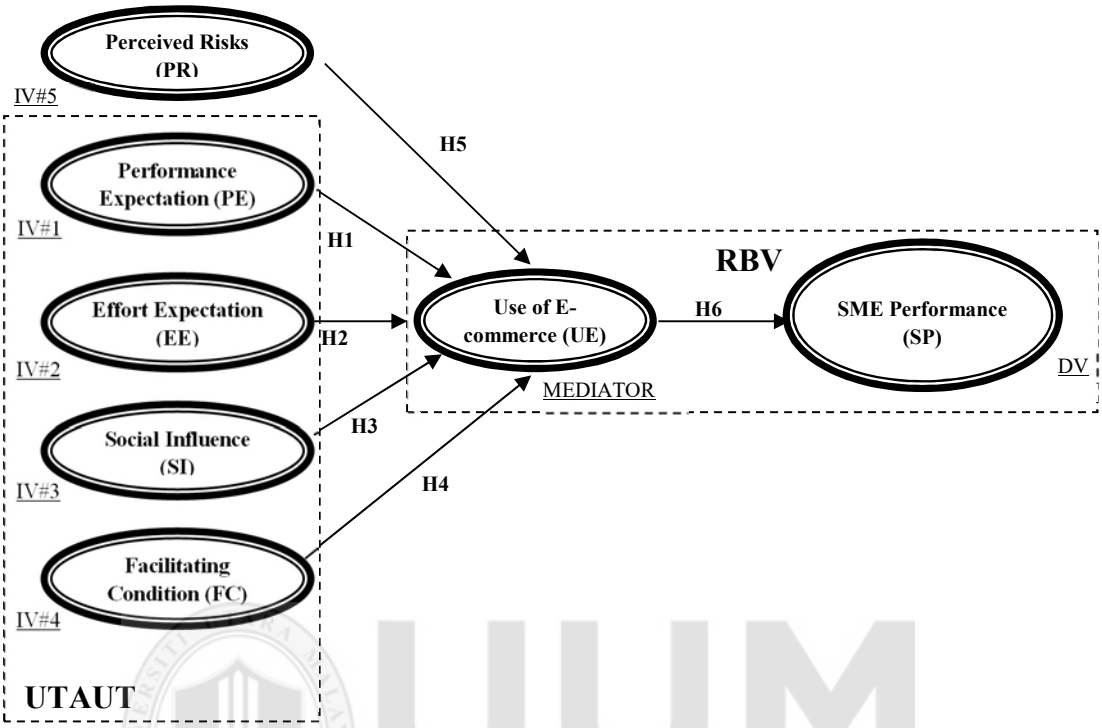

Figure 3.1
Proposed Research Framework and Hypothesized Relationships

This research has five independent variables, one mediator and one dependent variable. The selected independent variables are performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC) and perceived risk (PR). The use of e-commerce (UE) is mediator variable in this research while SME performance (SP) to use e-commerce for trading is the dependent variable. In this light, the use of e-commerce is related to the constructs in UTAUT and perceived risk which was used as the basis of the research. It is expected that PE, EE, SI, FC and PR predict UE. In the meantime, the construct on SME performance is based on the scale developed by Mohd Rosli *et al.* (2012) and adapted by Shamsuddin (2014).

3.3 Hypotheses Development

Based on the discussions on the theoretical scenario, the researcher believes that UE is driven by factors which could influence SME performance. Previous works have synthesized the hypotheses about the relationships in the framework. Thus, the following sections will discuss the hypotheses development and testing to validate these relationships.

3.3.1 Relationship between Performance Expectancy (PE) and Use of E-commerce (UE)

Previous studies have shown that performance expectation has a positive influence on the actual use behavior (UB) (Lee, 2009; Yang, 2010; Ahmad *et al.,* 2012; Cohen *et al.,* 2013; Ndayizigamiye, 2013; Maillet *et al*., 2015; Ahmed *et al.,* 2017). In this study, SME operators expect that the use of e-commerce will enhance their business efficiency. E-commerce is deemed as a useful tool to increase sales, increase the convenience of doing business and enable SME operators to accomplish business more quickly as less time is needed for business transactions. Thus, the construct of performance expectation has been conceptualized as the degree of SME operator believing in how e-commerce would improve their transaction performance. For this purpose, hypothesis 1 was developed as below:

H1: Performance expectancy has an influence on the use of e-commerce.

3.3.2 Relationship between Effort Expectancy (EE) and Use of E-commerce (UE)

Previous studies have found that effort expectancy has a positive influence on the actual use behavior (UB) (Lee, 2009; Ahmad *et al.,* 2012; Cohen *et al.,* 2013; Ndayizigamiye, 2013; Chiu & Ku, 2015; Ahmed *et al.,* 2017). In this study, SME operators expect that learning and using e-commerce would ease their business transaction. In this regard, e-commerce is deemed as a simple and understandable tool that is easier to use and learn, requires less transaction time and simple in nature. Thus, the variable on effort expectancy has been conceptualized as the degree of SME operator based on the view that e-commerce is easy to learn and use. For this purpose, hypothesis 2 was developed as below:

H2: Effort expectancy has an influence on the use of e-commerce.

3.3.3 Relationship between Social Influence (SI) and Use of E-commerce (UE)

Previous studies have found that social influence has a positive influence on the actual use behavior (UB) (Ahmad *et al.,* 2012; Maillet *et al*., 2015; Yueh *et al.,* 2016; Ahmed *et al.,* 2017). In this study, it is expected that SME operators will use e-commerce if they are encouraged by people around, influenced by important people in the company or peers such as business partners or competitors, from learning about the learning experiences of others or when they perceive that firms using e-commerce have higher prestige. Thus, the variable of social influence has been conceptualized as how SME operators perceive that their peers are expecting them to use e-commerce. For this purpose, hypothesis 3 below was developed:

H3: Social influence has an influence on the use of e-commerce.

3.3.4 Relationship between Facilitating Condition (FC) and Use of E-commerce (UE)

Based on previous studies, facilitating condition has a positive influence on the actual use behavior (UB) (Williams, 2009; Yang, 2010; Adam *et al.,* 2011; Ahmad *et al.,* 2012; Mursalin, 2012; Cohen *et al.,* 2013; Indahwati & Afiah, 2014; Tai & Ku, 2013; Serben, 2014; Chiu & Ku, 2015; Yueh *et al.,* 2016; Ahmed *et al.,* 2017). SME operators will use e-commerce if their company has sufficient resources and capabilities, access to government resources, good support by web-store service provider, have guidance from marketplace operators and receive assistance from specialized instructors in the marketplace. Thus, the construct of facilitating condition has been conceptualized as how SME operators perceive that technical infrastructure and organizational facilities are available to support the use of e-commerce. For this purpose, hypothesis 4 was developed as below:

H4: Facilitating condition has an influence on the use of e-commerce.

3.3.5 Relationship between Perceived Risk (PR) and Use of E-commerce (UE)

Findings of the previous studies have reported that perceived risk as a negative influence on the actual user behavior (UB) (Dinev *et al*., 2006; Lee, 2009; Wessels & Drennan, 2010; Lai *et al*., 2014). In this study, SME operators will use e-commerce if it is perceived as a platform for safe trading; safe from hackers, has a mechanism to safeguard sensitive company, free from sales exposures; free from avoidable financial risk, and is a matured technology. Thus, the construct of perceived risk has been conceptualized as the degree of SME operator perceiving that an uncertainty and

adverse consequences resulted from the usage of e-commerce to operate business activities. For this purpose, hypothesis 5 below was developed:

H5: Perceived risk has an influence on the use of e-commerce.

3.3.6 Relationship between Use of E-commerce (UE) and SME Performance (SP)

Previous studies have shown the use of e-commerce has a positive influence on business performance (Zhu & Kraemer, 2002; Zhu, 2004; Al-Dmour & Al-Surkhi, 2012; Azeem *et al.*, 2015; Mohammed, 2015; Popa & Soto Acosta, 2015; Gregory *et al*., 2017; Macchion *et al*., 2017). In this study, it was observed that firms that use of e-commerce gained better business performance. SME performance was generally measured by looking at four perspectives – its financial impact, its impact on learning and growth, its impact on internal business processes and its impact on customers. Thus, the construct of SME performance has been conceptualized as the degree of SME operator achieved their goals with economy, effectiveness and efficiency. For this purpose, hypothesis 6 below was developed:

H6: Use of e-commerce has an influence on SME performance.

3.3.7 Mediating role of Use of E-commerce (UE) with Performance Expectancy (PE) and SME Performance (SP)

For the current study, the mediator variable, the use of e-commerce, was tested to identify whether its inclusion mediates SME performance with its factors. In this regard, digital capabilities SMEs play a significant role in the relationship between the use of e-commerce and SME performance. It is suggested that the relationship between

digital capabilities, such as e-commerce adoption and SME performance, depends on the technology which is being driven by the values, processes or systems. Thus, this study aims to examine the relationship between technological adoption and firm performance.

Previous studies have found that performance expectation has an indirect and positive impact on SME performance through the mediating effect of use of e-commerce (Hyung & Dedahanov, 2014; Eid & El-Gohary, 2013; El-Gohary, 2012; Bakar & Ahmed, 2015; Sürer & Mutlu, 2015; Trainor *et al.*, 2011; Wang *et al*., 2010). It implies that digital capability, technological resources and relative advantage have been found to be important factors of SME performance with a mediating role of e-commerce adoption. For this purpose, hypothesis 7a was developed as below:

H7a: the relationship between performance expectancy and SME performance is mediated by the use of e-commerce.

3.3.8 Mediating Role of Use of E-commerce (UE) with Effort Expectancy (EE) and SME Performance (SP)

Previous studies have also found that effort expectation has an indirect and positive impact on SME performance through the mediating effect of the use of e-commerce (Yueh *et al.,* 2016; Sheikh, 2017). In this study, SME operators expect that effortless use of e-commerce will influence firms to adopt e-commerce to sustain the long-term performance of SMEs. In this regard, e-commerce ease of use enhances internal

communication, improves product listing, and cuts down the cost and time for a product logistic. For this purpose, hypothesis 7b below was developed:

H7b: the relationship between effort expectation and SME performance is mediated by the use of e-commerce.

3.3.9 Mediating Role of Use of E-commerce (UE) with Social Influence (SI) and SME Performance (SP)

IT infrastructure and digital capability are valuable resources for an SME. The role of management commitment and perceptions of ICT benefits influence the management to adopt the e-commerce. As the top management plays important role in SMEs, its decision will influence the firm to adopt e-commerce to sustain the long-term SME performance.

Based on the prospect of industry competition, it is necessary for SMEs to manipulate the progress in technology, such as the use of e-commerce, to sustain the competitive advantage. In this regard, competition from their competitors will influence the SME business strategy and performance. At the same vein their trading partner's business move has been found to be a significant precursor of innovation. In this case, when a trading partner adopts-commerce to facilitate business transactions, communication and to maintain a close relationship with its suppliers and vendors.

Previous studies have highlighted that social influence has an indirect and positive impact on the SME performance through the mediating effect of e-commerce use.

(Duan *et al*., 2012; Kazungu & Panga, 2015; Lucia-Palacios *et al*., 2014; Bakar & Ahmed, 2015; Shah *et al.*, 2012; Yueh *et al.,* 2016; Zhang *et al.,* 2014). For this purpose, hypothesis 7c below was developed:

H7c: the relationship between social influence and SME performance is mediated by the use of e-commerce.

3.3.10 Mediating Role of Use of E-commerce (UE) with Facilitating Condition (FC) and SME Performance (SP)

Government incentives and guidance from marketplace operators have been found to be significant in influencing the use of e-commerce. In this light, the greater the SMEs perceive the government incentives and technical supports from marketplace operators, it is more likely for them to adopt e-commerce to increase SME performance (Yueh *et al.,* 2016; Sheikh, 2017). For this purpose, hypothesis 7d below was developed:

H7d: the relationship between facilitating condition and SME performance is mediated by the use of e-commerce.

3.3.11 Mediating Role of Use of E-commerce (UE) with Perceived Risk (PR) and SME Performance (SP)

Perceived risk has a negative influence on the use of e-commerce and use of e-commerce has a positive influence on business performance. In this study, SME operators will use e-commerce if e-commerce is deemed free from potential risk that could affect their performance. For this purpose, hypothesis 7e below was developed:

H7e: the relationship between perceived risk and SME performance is mediated by the use of e-commerce.

The hypotheses of this research are formulated based on research framework. Table 3.1 summarizes the hypotheses formulated.

Table 3.1
Summary of research hypotheses in this research

	Relationship	Hypothesis
H1	PE-UE	*Performance expectancy has an influence on the use of e-commerce.*
H2	EE-UE	*Effort expectancy has an influence on the use of e-commerce.*
H3	SI-UE	*Social influence has an influence on the use of e-commerce.*
H4	FC-UE	*Facilitating condition has an influence on the use of e-commerce.*
H5	PR-UE	*Perceived risk has an influence on the use of e-commerce.*
H6	UE-SP	*Use of e-commerce has an influence on SME performance.*
H7a	PE-UE-SP	*The relationship between performance expectation and SME performance is mediated by the use of e-commerce.*
H7b	EE-UE-SP	*The relationship between effort expectation and SME performance is mediated by the use of e-commerce.*
H7c	SI-UE-SP	*The relationship between social influence and SME performance is mediated by the use of e-commerce.*
H7d	FC-UE-SP	*The relationship between facilitating condition and SME performance is mediated by the use of e-commerce.*
H7e	PR-UE-SP	*The relationship between perceived risk and SME performance is mediated by the use of e-commerce.*

3.4 Research Design

Research design is a plan to explore the research and get answers to the research questions outlined in Chapter 1. According to Alrawashdeh (2011), research design can be classified into descriptive, exploratory and explanatory research. First, *descriptive research* is used to collect information about an event. The main focus of a descriptive research is to offer a systematic description of a problem that is clear and the researcher is not required to study the causal relationship between two variables.

Second, *exploratory research* is conducted when the real scope of this issue or problem is not yet clear or the problem is not clearly defined. Exploratory research mainly allows preliminary information to be collected accordingly based on the problem. In this form of investigation, exploratory research guides the researcher to develop a measurement method and determine the research design. Additionally, the information used in exploratory research are sourced from interview, case study, pilot study and so on.

The last form of research is *explanatory research*. In contrast to descriptive and exploratory research, *explanatory research* or also known as causal research focuses on explaining the causal relationships between two variables. In the context of this study, this research can be classified as an explanatory research. As shown by the problem statement, research questions, research objectives and research framework presented in Chapter 1, this research can be categorized as an explanatory research because it collects data from SME managers to investigate the factors that influence SME use of e-commerce for the improvement of SME performance.

Quantitative research approach and qualitative research approach are two forms of scientific research approaches. Qualitative research uses non-numerical assessment to explore the relationships among a phenomenon under observation (Alrawashdeh, 2011) where texts, pictures, or categories are researched to describe an event. Meanwhile, a quantitative research explain a phenomenon by using numerical data that are backed by evidence shown in the statistics presented in graphs, charts and table. This research is a quantitative research that uses a questionnaire to collect data from the sample and as a quantitative research, the result will be presented as numbers, statistics, and figures.

In a quantitative research, dependent variable(s) is/are the essence of the research, which are influenced by other variables. These include the mediating, independent and moderating variables. Independent variables are presumed to bring the causal effect on other variables while the mediating variables are "mechanism that underlies an observed relationship between an independent variable and a dependent variable and moderating variables, which have a contingent effect on the relationship between a dependent and an independent variable" (Baron & Kenny, 1986).

This research is a quantitative research which intends to explore the relationship between several factors and the use of e-commerce in order to increase SME performance. The dependent variable of the study is SME performance, while the independent variables are performance expectancy; effort expectancy; facilitating conditions; social influence and perceived risk. The mediating variable is the use of e-commerce.

3.5 Population and Sampling Technique

A sample is a subset of a population. The computation of sample size is an important fundamental issue in a research. Determining an appropriate sample is needed because it would be used to generalize the population of interest, which in this case is the SMEs which used Lelong.my as a business platform (Sekaran & Bougie, 2016). A sample is researched because it is impossible to carry out the research by studying the entire population. In this light, low response rate and limited cost and time available may be the main factors hindering a researcher from doing an depth study into every subject in the population. Hence, determining the right sample size and right respondents is very important in planning a research planning. Sampling is also advantageous as the research can be conducted with a lower cost in a faster time. Moreover, sampling also helps the researcher to generate more accurate results.

Understanding the sample's characteristics allows a researcher make generalization and speak about population (Sekaran, 2014). The population of this research comprises of sellers registered in Lelong.my online portals. The sellers could also have webstores in other platforms like Lazada, 11Street and others. In the planning stage, the contact information of e-commerce adopters (email addresses and phone numbers) were obtained from the "Seller Profile" section in each of their individual webstore. In regard to the sampling frame, registered business sellers of Lelong.my were chosen as respondents because they have adopted e-commerce which were in line with the principle goal of this study to identify the factors for the use of e-commerce to improve SME performance.

3.5.1 Sample Size

Choosing a right sample is considered as a critical step in a research. In general, the sample size could be determined either by using the statistics method or based on the general rule of thumb (Aaker *et al.*, 2016; Tashakkori & Teddlie, 2010). Practically, it is not possible to gather data from every part of the population due to time constraint, high cost and lack of research support to collect information. Thus, selecting the right sample size from targeted population could help produce a more consistent and reliable result for this study (Sekaran, 2014).

Hair *et al*. (2011) suggested that for a statistical analysis, as good sample size is 10-20 times greater than the variables used in this research. Hair *et al.* (2014a & 2014b) suggested that the sample size for PLS-SEM analysis should be around 200 respondents. Thus, the required sample size of this research was around 200 respondents.

In addition, several researchers who conducted studies in Malaysia have reported low response rates, particularly in the context of Malaysian SMEs. Thus, Ramayah *et al*. (2005) suggested a rate of between ten to 20 percent for a survey while Chan and Chong (2012) reported a 10.60 percent response rate in a study which used the Rossetanet study. Hussain *et al*. (2015) reported the response rate of 19.70 in his study on export performance and business performance of Malaysian MSME. Moreover, Lim *et al*. (2015) reported the response rate of 8.30 percent from a 120-day data collection process and this rate was considered as valid and usable for their analysis of factors influencing

Malaysian SMEs to adopt e-commerce. Bartlett *et al*. (2001) suggested a 15 percent anticipated response rate while Liew (2004) obtained only nine percent response rate in his research on the adoption of e-commerce among SMEs in North Malaysia. Meanwhile, after giving tokens of appreciation for their respondents, Abdullah *et al*. (2013) recorded an overall response rate of 20 percent. Poorangi *et al*. (2013) indicated almost ten percent response rate from 1,200 SMEs in Malaysia while Lim *et al*. (2016) reported a ten percent response rate for their work on e-commerce adoption among manufacturers in West Malaysia.

Ideally, a bigger sample size is preferable to avoid the possibility of non-response bias (Sekaran & Bougie, 2016). In relation to this, the researcher used the responses rates from previous studies with the same or a similar population, in this case, the rate of 15 percent was used to estimate the sampling for securing the minimum number of sample sizes. Hence, to obtain 200 respondents for expected 15 percent response rate, a minimum of 1,334 samples were required.

3.5.2 Unit of Analysis

According to Sekaran (2014), a unit of analysis is who or what is being investigated in a given research. Thus, the unit of analysis is the type of unit the research used in measuring the variables (Sekaran, 2014). In this research, self-assessment technique was adopted and the key person in each SME was requested to provide a feedback on whether they agree or disagree with the statements in the questionnaire.

The unit of analysis for this study is the important person in the company. The important person in the company is the most suitable respondent as he/she is the driver of the SME performance. There are many previous studies that have used important person in a company as their respondents (Azam & Quaddus, 2009; Adam *et al.*, 2011; Moghavvemi *et al.*, 2011; Al-Dmour & Al-Surkhi, 2012; Fillion *et al.*, 2012; Mursalin, 2012; Indahwati & Afiah, 2014; Ndayizigamiye, 2013; Peris *et al.*, 2013; Abu *et al.*, 2015; Popa & Soto Acosta, 2015). It is expected for the important person in the company to have access to the company-level data on the variables of interest the company level in this study. Based on the UTAUT and RBV theoretical frameworks, the variables under analysis are within the control of the key person concerned.

3.5.3 Sampling Technique

In reality, low response rate, limited time, money and accessibility issues limit a researcher to collect the data from the entire population. In practice, to overcome the low response rate, the census method was used. The census method is a data collection method where survey data were collected from every respondent in a population. In other words, census data collection method refers to the complete listing of a universe that may be a place, a group of people or a specific locality through which the researcher may collect the data from (Farood, 2013). The census method is necessary in some cases, particularly to gain vast knowledge. The researcher has the opportunity to conduct an intensive study on the problem via this method. Furthermore, the use of this method could produce data with a higher degree of accuracy.

It is argued that this method is costly, labor intensive, and time-consuming for a large population. However, with the help of the technology such as email, this method could be done and it has provided everyone with an equal opportunity to be the respondents for this research. Nowadays, the use of Internet for data collection is not a new phenomenon. The questionnaire was uploaded into the Google Forms and it could be accessed 24 hours a day, seven days a week. For this reason, the researcher used census method to collect the data from the sellers listed in Lelong.My. Moreover, in this research, when selecting SMEs as the unit analysis of the subject in the sampling, the managers/owners are considered as the key person in the company and they were not subjected to PDPA 2010. This technique is considered fast and easy where the respondent list was obtained from Lelong.my website.

3.5.4 Time Dimension

The time-frame required to conduct a research can be divided into two, namely, longitudinal and cross-sectional survey (also known as a cross-sectional analysis, transversal study, prevalence study). In a longitudinal survey, the data collection spans over an incidence and involves repeated observations of the same variables over a long period of time. Meanwhile, in a cross-sectional survey, the data are collected at once, representing the use of e-commerce at a specific time and the usage pattern of different key persons with the same characteristics are compared.

This study collected data using a cross-sectional approach because this approach is able to sort out the relational existence and magnitude of causal effects among research

variables at a time. In this regard, prior studies on UTAUT or RBV such as Tibenderana & Ogao (2008); Adam *et al.* (2011); Ghalandari (2012); Khelil & Affes (2013); Indrati *et al.*, 2014; Shehu, 2014; Al-Dhaafri *et al.* (2016) and Hassan & Hart (2016) have used cross-sectional studies.

3.5.5 Questionnaire

A Questionnaire is an efficient method to collect data. The questionnaire is a set of questions specified to represent variable information based on the feedback of a respondent about his/her agreement/disagreement or satisfaction/dissatisfaction. Questionnaires can categorized into three types, namely dichotomous, open-ended and close-ended. The respondents answer the questionnaire measuring their subjective and objective impression on each item attached to the variable. The questionnaire used in this research was adapted and adopted from the previous studies.

In this quantitative research, the questionnaire consists of 15 demographic questions and 46 items. The measuring instrument include six items for each independent variable; six items to measure the mediating variables and ten items to measure the dependent variables. The questionnaire was prepared in Bahasa Malaysia, English and Mandarin.

3.6 Operationalization of Variables

Operational definition defined as “specific testing or measurement criteria” (Blumberg *et al.*, 2014). In operational definition, the measurement of a concept is based on the

dimensions represented by the concept. The dimensions are then interpreted into elements that were able to be observed and measured to further develop a measurement index for the concept (Sekaran, 2014).

After the research framework and hypotheses have been formulated, the operationalization of the variables was conducted to the define variables or constructs into a measurable factor, empirically and quantitatively. Operationalization is a technique of reducing the abstract concepts into more observable behavior or characteristics (Sekaran & Bougie, 2016). First, the variables were defined as what to be measured. Second, the objective of having the measurement was identified, then the items of the measurement were determined and finally, the response format about the subject and instrumentation were designed.

The operationalization of variable facilitates how the researchers are going to measure a construct, in this case, for example, SME performance. It is essential to define the constructs as it will determine accurate replication from the previous theories said UTAUT and RBV. A failure in the operationalization means that the constructs used during the measurement are not standardized as stated in the underpinning theories. Thus, operationalization helps in dentifying the exact measuring method used and allows other researchers to follow the same methodology.

In this study, there are seven constructs comprising of the dependent, independent, and mediating variables. Five variables, namely, performance expectancy (PE); effort

expectancy (EE); social influence (SI); facilitating condition (FC) and the use of e-commerce (UE) were adapted from Venkatesh *et al.* (2003). Perceived risk (PR), was adapted from previous studies (Gürhan-Canli & Batra, 2004; Homburg *et al.*, 2010; Tai & Ku, 2013) while SME performance (SP) was adopted and adapted from Mohd Rosli *et al.* (2012) and Shamsuddin (2014). The items used in the questionnaire are listed in the following section.

3.6.1 Operationalization of Performance Expectancy

In this study, performance expectancy is defined as "the degree to which a SME manager or owner believes that using e-commerce will help him or her to attain gains in job performance". This construct was included to measure the extent which SMEs operators believs that utilizing e-commerce will help them to attain gains in SME task performance. To measure performance expectancy, six items were adapted from from Venkatesh *et al*. (2003). The value of Cronbach alpha for this measure is 0.92. All the six items of performance expectancy (PE) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.1 tabulates the six items for performance expectation construct.

3.6.2 Operationalization of Effort Expectancy

In this study, effort expectancy is defined as "the degree of ease associated with the use of e-commerce". This construct was used to measure the extent which SME believes that learning to use e-commerce will not require significant effort. To measure effort

expectancy, six items were adapted from Venkatesh *et al*. (2003). The value of Cronbach alpha for this measure is 0.94. All of the six items on effort expectancy (EE) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.2 tabulates the six items for effort expectation construct.

3.6.3 Operationalization of Social Influence

In this study, social influence is defined as "the degree to which an SME operator perceives that important others believe he or she should use the e-commerce". This construct measures the extent to which SME perceives that their peers directly or indirectly influence them to use e-commerce in their business. Here, six items from Venkatesh *et al*. (2003) have been adapted to measure social influence. The Cronbach alpha for this measure is 0.94. All the six items of social influence (SI) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.3 tabulates the six items in the construct of social influence.

3.6.4 Operationalization of Facilitating Condition

In this study, facilitating condition is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the e-commerce". This construct was used to measure the extent which SME perceives that the existing external or internal organizational and technical infrastructure to

support them to use e-commerce. To measure the facilitating conditions, six items from Venkatesh *et al*. (2003) have been adapted. The value of Cronbach alpha for this measure is 0.87. All the six items regarding the facilitating conditions (FC) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.4 tabulates the six items in the facilitating conditions construct.

3.6.5 Operationalization of Perceived Risk

In this study, perceived risk is defined as "a perception refers to an individual's subjective expectation of potential issues while conducting monetary transactions over ICT services". Perceived risk is the perception of uncertainty and adverse consequences resulting from a given activity. This construct was included to measure the extent to which SME perceives that the uncertainty and adverse consequences resulting from using e-commerce in their business. To measure perceived risk, six items from Tai and Ku (2013), Homburg *et al.* (2010) and Gürhan-Canli and Batra (2004) have been adapted. The value of Cronbach alpha for this measure is 0.91. All six items of perceived risk (PR) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.5 tabulates the six items for the perceived risk construct.

3.6.6 Operationalization of Use of E-commerce

In this study, use of e-commerce is defined as "an individual's liking, enjoyment, joy, and pleasure associated with technology use". This construct was used to measure the extent to which SME operators perceive the use of e-commerce in their business. To measure the use of e-commerce, six items have been adapted from Venkatesh *et al.* (2003). The value of Cronbach alpha for this measure is 0.84. All the six items of use of e-commerce (UE) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.6 tabulates the six items for the construct on the use of e-commerce.

3.6.7 Operationalization of SME Performance

In this study, SME performance is defined as "a critical factor for effective management (Salaheldin, 2009) to which an operation fulfills the performance and meet the needs of the customers (Slack *et al.*, 2001)". This construct was used to measure performance scope of growth in sales revenue, profitability, returns on assets, returns on sales, market share, labor productivity, level of customer satisfaction, overall financial performance, level of customer loyalty and growth of worker (machine). To measure SME performance, ten items from Mohd Rosli *et al.* (2012) and Shamsuddin (2014) have been adopted and adapted. The value of Cronbach alpha for this measure is 0.90. All the ten items of SME performance (SP) were measured using seven-point Likert scale "(1 = strongly disagree; 2 = Disagree; 3 = somewhat disagree; 4 = either agree or

disagree (Neutral); 5 = somewhat agree; 6 = Agree; 7 = strongly agree)". Table A3.7 tabulated the ten items for SME performance construct.

3.7 Measurements of Variables and Instrumentation

A measurement scale with between five and seven intervals is deemed as more reliable than scale with higher or lower intervals (Krosnick & Fabrigar, 2012). Meanwhile, the use of a measurement scale with no middle point might increase the error of measurement (Krosnick & Fabrigar,2012). Similarly, Dawes (2008) reported that a scale with five or seven intervals is likely to produce better results, with the seven-interval scales have better results than five-interval scales. Thus, the questionnaire was designed using a seven-interval scale to measure all of the constructs namely PE, EE, SI, FC, PR, UE and SP.

The interval scale was selected because it could measure the extent of the different key person's perception. The seven-point Likert scale was reported to provide a better feedback as it does not subject the respondents into undue cognitive burden (Hair *et al.*, 2010). Based on existing literature, Table 3.2 presents the adapted survey items that will capture the study variables.

Table 3.2
Variables, No. of Items, Source, Cronbach Alpha

Constructs	Adapted/adopted Items	Source	Cronbach Alpha
Performance Expectancy (PE)	**PE1**: Using the e-commerce would enhance my business effectiveness. **PE2**: My Company would find that e-commerce is useful in my business. **PE3**: Using the e-commerce increases my business productivity. **PE4**: Using the e-commerce enables my staff to accomplish transactions more quickly. **PE5**: Use of the e-commerce can decrease the time needed for my business transaction. **PE6**: If my company uses the e-commerce, it will increase the quality of sales of my business.	Venkatesh *et al.*, 2003	0.91-0.92
Effort Expectancy (EE)	**EE1**: Learning to use the e-commerce would be easy for my staff. **EE2**: My staff interaction with the e-commerce would be clear and understandable. **EE3**: It would be easy for my staff to become skillful at using e-commerce. **EE4**: My staff would find e-commerce easy to use. **EE5**: Using the e-commerce involves less time doing business transaction. *[Reverse order from original item]* **EE6**: The e-commerce is simple in nature. *[Reverse order from original item]*	Burnham *et al.*, 2003; Venkatesh *et al.*, 2003	0.90-0.94

Table 3.2 (Continued)

Social Influence (SI)	**SI1**: I feel people around me would encourage my company to use e-commerce. **SI2**: People who are important to the company would think that my company should use e-commerce. **SI3**: A company which uses the e-commerce has more prestige than those who do not. **SI4**: My company likes to learn about others' using the e-commerce experience (from blog, review, comment, business magazine and so on). **SI5**: A company which uses the e-commerce has a high profile. **SI6**: My company uses the e-commerce because of my peers for example business partners/competitors also using the e-commerce.	Tai & Ku, 2013; Venkatesh *et al.*, 2003	0.86-0.94
Facilitating Conditions (FC)	**FC1**: My company has the resources necessary to use the e-commerce. **FC2**: Given the government resources, opportunities and knowledge it takes to use the system, it would be easy for my company to use the e-commerce. **FC3**: Guidance was available to my company in the selection of the e-commerce platforms. **FC4**: A specific instructor is available for assistance with system difficulties. **FC5**: Using the e-commerce fits into our way of doing business. **FC6**: Using the e-commerce is compatible with all aspects of my business transaction.	Venkatesh *et al.*, 2003	0.83-0.87

Table 3.2 (Continued)

Perceived Risk (PR)	**PR1**: My company is worried that others might be able to access my company e-commerce account. **PR2**: My company would not feel totally safe providing business information to e-commerce marketplace operators. **PR3**: My company is uneasy about using e-commerce because the company may lose money due to incorrect operation, a careless mistake and system processing errors. **PR4**: When a marketplace shutdown, that problem caused great financial loss to my company. **PR5**: My company concerns that e-commerce cannot meet my company needs due to poor functionality or system malfunctions. **PR6**: The likelihood of e-commerce performance is expected significantly lower than the likelihood of my real retail business performing as expected.	Tai & Ku, 2013; Homburg *et al.*, 2010; Gürhan-Canli & Batra, 2004	0.78-0.91
Use of e-commerce (UE)	**UE1**: Using the e-commerce is a good idea. **UE2**: My company finds using the e-commerce to be enjoyable. **UE3**: My company has fun using the e-commerce. **UE4**: The e-commerce makes business more interesting. **UE5**: Doing business with e-commerce is fun. **UE6**: I like doing business with the e-commerce.	Venkatesh *et al.*, 2003	0.77-0.84

Table 3.2 (Continued)

SME Performance (SP)	**SP1**: The company has increased on growth in sales revenue **SP2**: The company has increased on profitability **SP3**: The company has increased on return on asset **SP4**: The company has increased on return on sales **SP5**: The company has increased in market share **SP6**: The company has increased on labor productivity **SP7**: The company has increased on level of customer satisfaction **SP8**: The company has increased on overall financial performance **SP9**: The company has increased on level of customer loyalty **SP10**: The company has increased in growth of machine or worker	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014	0.90

3.8 Pilot Test

A pilot test was performed to analyse the instrument validity before the data were collected from the respondents. Before starting the actual research, the pilot study was conducted for the purpose of identifying the problems and helps the researcher to make a correction on the instrument. Moreover, the validity justifies "the extent to which an instrument is measuring" (Sekaran & Bougie, 2016) and "the degree to which construct measured is unbiased and ensures consistent measurement across time and across various items in the instrument" (Adcock & David, 2001) while reliability justifies "the extent to which an instrument is free from error, consistent and stable across various items of the scale".

To ensure the content and face validity, the researcher presented the questionnaire to the lecturer from Universiti Utara Malaysia (UUM) as well as industrial practitioners as the second reviewers, see Table 3.3. Face validity measurement by academic and industry practitioners were conducted in this study to ensure how well the research instrument measures what it was designed to measure. Industry practitioners selected are experienced owners/managers of firms practicing e-commerce who are well-aware about the nature of e-commerce. Meanwhile, the academic experts involved are lecturers from OYA-GSB, UUM. The reviewers reviewed the extent to measure each item describes in the proposed constructs to ensure that the itemized statement and the scale chosen are appropriate and easily understandable by the respondents. These inputs helped the researcher to make the correction of items selected to measure the variables. Among the corrections were 1) re-wording/re-phrasing the construct in order to ensure the respondents understand the questionnaire; 2) changing the unit analysis from individual to organization and 3) adapting the questionnaire fit to the e-commerce context.

Table 3.3
Content and Face Validity

Expert	Designation	Experience	Organization
A	Senior Lecturer	>10 years	UUM
B	Manager	>7 years	Lelong Seller
C	Manager	>4 years	Lelong Seller

3.9 Data Collection

In this study, quantitative data were collected by using a questionnaire. The respondents of this study are those who registered their company at Lelong marketplace. As their email addresses and contact numbers were publicly available in the member profile, contacting them using these contact details does not violate the Malaysian PDPA 2010. In this light, the person registered in the marketplace is believed to be the decision maker of the company.

The survey questionnaire was uploaded to Google Forms so that the respondents could to access the self-administrative questionnaires anytime, anywhere. The respondents received a link to the survey and an invitation letter with the UUM official letterhead was also attached. The UUM's official letter requested the participants to provide information relevant to the scope of the research and research objectives of the study. Each respondent was advised to spend around 10-15 minutes to complete the questionnaire. The letter also assures the respondents that the data will be solely used for academic purposes. A time frame of three weeks was given to respondents to respond to the questionnaire in Google Forms.

For each company, two email addresses and a mobile number were taken from registered profiles in the portals. In all, from 1,595 companies, 2,527 email addresses and 1,595 mobile numbers were collected. From the 2,527 email addresses, they were divided into 26 groups. For each working day since 2nd Oct 2017, the link for the Google form questionnaire was sent to roughly 100 email addresses. Out of the 2,527 emails

sent, 79 emails were undelivered due to various reasons, hence, 2,448 questionnaires had been delivered to the prospective respondents. Dillman *et al.* (2014) suggested that response rates will usually be higher when there is a follow-up with the respective respondents. Thus, after three weeks, a follow-up email was sent to each respondent to remind the companies about the request.

After three months, the researcher received around 60 responses, which were named as the 'Early Batch'. This constitutes of about 2.25 percent of the response rate. Due to the low responses rate, the researcher decided to follow up by calling the individual phone number using Whatsapp starting on 2nd Jan 2018. Out of the 1,595 mobile numbers, 111 mobile numbers did not have Whatsapp account. Consequently, 1,484 companies were requested to participate in the study. After one month, the researcher was able to collect another 142 responses which are known as the Late Batch. These responses constitute of 9.57 percent of the response rate. In all, the data collection duration took 143 days. After all these efforts, the questionnaire survey yielded 202 responses. Therefore, the overall response rate was 12.66 percent which is lower than the expected response rate of 15 percent.

3.10 Techniques for Data Analysis

To answer the research questions, structural equation modelling (SEM) was used to identify multiple causal relationship effects, namely direct effect and indirect effect, by including mediation. SEM was a flexible statistical procedure for testing hypotheses about relationships between variables in a research model. SEM could be conducted

with multiple DVs as well as multiple IVs. Based on Gefen (2000), direct and indirect relationships between one or more independent latent variables (LVs) and one or more dependent LVs could be inspected by SEM. SEM additionally an adaptable demonstrating device because it can lead various multivariate statistical analyses, with regression analysis, path analysis, factor analysis and growth curve modelling (Gefen *et al.*, 2000; Urbach & Ahlemann, 2010).

Based on Chin (1998), researchers found flexibility in the interplay between theory and data when SEM applied correctly. It offered better preferences over the original of generation of analysis techniques such as factor analysis, principal component analysis, or multiple regressions. Moreover, Chin (1998) stated that SEM helps researchers to: 1) model connections among various indicators and basis variables; 2) constructs observable LVs; 3) model lapses in estimation for watched variables; and 4) measurably test from the earlier theoretical and estimation assumptions against experimental information. Partial least square-structural equation modelling (PLS-SEM) or variance based-structural equation modelling (VB-SEM) was a statistical procedure for studying the multivariate relationship between the latent and observed variables.

For the current research, the researcher has used PLS-SEM due to several reasons. First, it is well-recognized and accepted technique in social sciences and management research (Henseler *et al.,* 2009 & 2014; Hair *et al.,*2012; 2014a & 2014b; Ringle *et al.*, 2015). Second, PLS-SEM could be suitably applied to minimum measurement scales and sample size (Hair *et al*., 2014a). PLS-SEM has the preferred capability to estimate

the model even the model consists of one-and two-item scales as comparec to other statistical software (Hair *et al.*, 2014a). Third, it has been recommended by many researchers as it is believed PLS-SEM is most suitable for prediction-oriented models or extension of an existing theory (Hair *et al*., 2011; Henseler *et al.*, 2009). In this regard, the PLS-SEM has shown a higher effectiveness in exploratory research while covariance based-structural equation modelling (CB-SEM) has shown higher effectiveness in confirmatory research (Gefen *et al*., 2011).

Consequently, PLS-SEM was preferred over CB-SEM as the theory was still in the developing stage (Hair *et al.*, 2014a). Thus, PLS-SEM is deemed suitable for testing the new extension of the existing RBV-UTAUT-PR theory. Moreover, PLS-SEM is robust to non-normality and small sample size while CB-SEM not (Sarstedt *et al*., 2011; Hair *et al*., 2014a). Lastly, PLS-SEM was preferred because of the robustness to handle many constructs and indicators in a structural model (Hair *et al.*, 2011). Hence, PLS-SEM was selected because the research model has 46 indicators and seven constructs. Eventually this research applied following procedures to conduct the PLS-SEM path analysis (Henseler *et al*., 2009). The procedures are described using two models, measurement model and structural model.

3.10.1 Measurement Model (Outer Model)

Measurement model examined the individual item reliability by checking the loading and cross-loadings of all items in the variables. The items in outer loading that less than 0.50 should be removed one by one starting with the loading that has the lowest value

to improve the data quality (Hair *et al*., 2014). It was conducted to explore any potential problem which served as a prerequisite problem for measurement model. Then, the measurement model was used to investigate the model's reliability and validity.

Internal consistency reliability refers to the "extent to which all items on a particular sub scale are measuring the same concept" (McCrae*et al.*, 2011). As for this study was concerned, the composite reliability (CR) of each construct was calculated to determine the internal consistency of the data. From the rule of thumb, CR values must exceed the recommended standard value of 0.70 (Cheung & Wang, 2017; Hair *et al*. 2014a).

The outer model could be assessed by looking at the convergent validity of a construct using average variance extracted (AVE), and discriminant validity using Fornell-Larcker criterion (Fornell & Larcker, 1981). From the rule of thumb, the (AVE) must be more than 0.50 for convergent validity criteria (Hair *et al.*, 2014a). For discriminant validity, AVE's square root must greater than the correlations between the construct and other constructs for the Fornell-Larcker criteria (Fornell & Larcker, 1981). Item's cross loading of each indicator was highest for its assigned construct in the discriminant validity criteria. Finally, the Heterotrait-Monotrait Ratio (HTMT) should be lower than 0.9 (Gold *et al*., 2001).

3.10.2 Structural Model (Inner Model)

After the confirming the measurement model (outer model), next steps towards the structural model (inner model) to answer the research questions were studied. A Structural model was formulated to investigate the relationships dependence in the hypothesized model (see Table 3.4). This structural model produced an inner modeling, an analysis of the direct relationship between the constructs and t-values of the path coefficients (Hair *et al*., 2014). Henseler *et al.* (2009) revealed that the path coefficient was similar like standardized beta coefficient value (β) in regression analysis where beta coefficient values (β) of the regression and t-values weres tudied to decide their significance. Based on the rule of thumb, t-value greater than 1.645 (one tail) was measured to be as significant which will be further used for decision making on the research's hypothesis (Hair *et al.*, 2014).

Moreover, this research included direct and indirect effects through mediation from the use of e-commerce. Previous researchers proposed several techniques for mediation test namely Baron and Kenny (1986), Sobel (1982) and bootstrapping (Preacher & Hayes, 2004; Hayes *et al.*, 2009). Hayes *et al.* (2009) indicated that "Bootstrapping is a non-parametric resampling procedure" because this was a well-authenticated way for determining the mediation effect. For testing the mediating effect, the more appropriate way was explained by Preacher and Hayes (2004) who presented the bootstrapping of a given sampling distribution of the indirect-effects, which worked for simple and multiple models (Hair *et al.*, 2014b). Thus, resampling of the mediation technique or bootstrapping was used to test the effects on the constructs in this study.

Table 3.4
Analysis Technique for Answering Research Questions

Research Question	Techniques
RQ1	Path Analysis
RQ2	Path Analysis
RQ3	Bootstrapping

3.11 Chapter Summary

In summary, the chapter started with an explanation of the proposed research framework and presented the research's framework to extend UTAUT to cover one factor, namely perceived risk; and links to RBV's SME performance. From the research framework, eleven hypotheses wereput together in achieving the objectives of the research. Then, the research model with the corresponding hypotheses to be tested was proposed. Constructs were operationalized accordingly to the research framework. This chapter has discussed the research method applied to achieve the research purpose. In this case, the research is an explanatory and quantitative research with a questionnaire is deemed as the best method for data collection. To test the research model, census sampling methodology was used. Moreover, the detailed process in identifying the sample size, unit of analysis, sampling technique, time dimension and questionnaire were discussed and it was reported that the questionnaire for data collection was designed accordingly based on the operationalization of the variables. The questionnaire contains the Likert scale and the content validity has been determined. Finally, the measurement and structure model have also been discussed in detail.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter focused on the statistical analysis to answer the research questions via the results and discussion of the research. The numerous statistical techniques of analysis were used to provide an important contribution about the adopting factor from the e-commerce adopter that was linked to their business performance. SPSS and SmartPLS were used to conduct the analysis on the surveyed data. The main objective of this study was to investigate the effect of performance expectancy, effort expectancy, social influence, facilitating conditions and perceived risk in using the e-commerce that led to influence the SME performance. As such, the findings of the current research might provide the insights into the conceptual development of use of the e-commerce by its adopter.

4.2 Response Rate

The data used for this research were collected from owner/manager in e-commerce practitioner in Malaysia. Series of reminders in terms of emails and Whatsapp were used and also few questionnaires were collected on the spot during meeting with them. The data collection duration took 143 days. After all these efforts, this questionnaire survey yielded 202 responses. Therefore, the response rate of the returned questionnaires was 12.66 percent. Respondent#56 (R56) and Respondent#200 (R200) were withdrawn because they were not the retail sellers. Manual copies of

Respondent#201 (R201) and Respondent#202 (R202) were incomplete and excluded for further analysis. Thus, the response rate for usable and final questionnaires to the analysis was 11.54 percent.

Table 4.1 summarized the data collection details. This response rate was comparable to those Malaysian researchers reported in e-commerce adoption studies in Malaysia. For example, Chan and Chong (2012) reported 10.60 percent response rate in Malaysian adopting the Rossetanet study. Hussain *et al*. (2015) reported 19.7 percent response rate in studying the export performance and business performance by Malaysian MSME. Lim *et al*. (2015) reported that 8.3 percent respond rate obtained from 120 days data collection was valid and usable for their analysis in factors influencing Malaysian SME to adopt e-commerce. Hence, the research response rate was in line with the previous reported result in Malaysia.

Table 4.1
Response Rate of the Questionnaires

Response	**Frequency/Rate**
Number of Company	1,595
Questionnaires Returned	202
Useable Questionnaires	184
Response Rate	12.66%
Valid Response Rate	11.54%

4.3 Tests of Non-Response Bias

After the confirmation of valid returned questionnaires, an independent t-test was conducted on study variables to determine whether the responses receive from respondents who responded early were significantly differed from those who responded late.

Table 4.2
Early Batch and Late Batch Statistics

LV	Group	N=184	Mean	Std. Deviation	Std. Error Mean
PE	Early	48	6.1649	.88300	.12745
	Late	136	6.0760	.85174	.07304
EE	Early	48	5.5868	.92188	.13306
	Late	136	5.3873	.97624	.08371
SI	Early	48	5.6250	.96174	.13881
	Late	136	5.4620	.93271	.07998
FC	Early	48	5.2951	.93351	.13474
	Late	136	5.2929	.90506	.07761
PR	Early	48	3.7552	1.12533	.16243
	Late	136	3.5821	1.34333	.11519
UE	Early	48	6.2465	.87248	.12593
	Late	136	6.0705	.83591	.07168
SP	Early	48	5.4521	1.13644	.16403
	Late	136	5.3037	.97330	.08346

As previously mentioned, the present study made use of the survey questionnaire designed for data collection. The questionnaires were first distributed via email to the e-commerce adopters. Due to the low responses rate, the researcher decided to follow up with seller using Whatsapp. After the data screening, first batch namely Early Batch, had 48 respondents while second batch namely Late Batch, had 136 respondents. Two

groups of the statistics were tabulated in Table 4.2. Hence, Table 4.2 concluded that the group mean and standard deviation for these two groups were not very different.

The two-sample *t*-test (unpaired, independence sample test) was used for the assessment of the non-response bias to compare the responses of the Early Batch respondents with the Late Batch. In t-test, null hypothesis was defined as H_0: $\mu_1 = \mu_2$; while alternative hypothesis was defined as H_a: $\mu_1 \neq \mu_2$. In Table 4.3, to determine the assumption of equal variance or not, Levene's Test for Equality of Variances, F-test's p-value was used to compared with α-value (H_0: $\sigma^2_1 = \sigma^2_2$; H_a: $\sigma^2_1 \neq \sigma^2_2$;). Since all the constructs' p-values > α-value (0.05), then the researcher failed to reject H_0: $\sigma^2_1 = \sigma^2_2$ except PR to reject the H_0: $\sigma^2_1 = \sigma^2_2$. For constructs (PE, EE, SI, FC, UE and SP) with failed to reject H_0: $\sigma^2_1 = \sigma^2_2$ figures from the row of the "Equal variances assumed" to be used while for construct (PR) with reject H_0: $\sigma^2_1 = \sigma^2_2$ figures from the row of the "Equal variances not assumed" to be used. Finally, all the constructs' p-values > α-value (0.05), then the researcher failed to reject H_0: $\mu_1 = \mu_2$. The results of most of the variables implied that there was no difference in Early Batch and Late Batch responses Thus, non-response bias will not affect the generalizations of the findings.

Table 4.3
Independence Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
PE	Equal variances assumed	0.374	0.542	0.616	182	0.539	0.08895	0.14437
EE	Equal variances assumed	0.9	0.344	1.235	182	0.218	0.19955	0.16159
SI	Equal variances assumed	0.074	0.786	1.032	182	0.303	0.16299	0.15786
FC	Equal variances assumed	0.006	0.94	0.015	182	0.988	0.00225	0.1532
PR	Equal variances not assumed	5.047	0.026	0.869	97.571	0.387	0.1731	0.19913
UE	Equal variances assumed	0.657	0.419	1.24	182	0.216	0.17606	0.14195
SP	Equal variances assumed	1.608	0.206	0.868	182	0.386	0.14841	0.1709

4.4 Data Coding

The code number should be assigned to each of the construct for the ease of identification and data analysis. Therefore, Table 4.4 indicated the constructs used in the research were coded.

Table 4.4
Variable Coding

Variables	Code
Performance Expectancy	PE
Effort Expectancy	EE
Social Influence	SI
Facilitating Condition	FC
Perceived Risk	PR
Use of E-commerce	UE
SME performance	SP

4.5 Common Method Bias Test

Data collection was conducted at the same time by using the same instrument, the common method bias (CMB) might affect the collected data. CMB referred to the variance attributable exclusively to the measurement procedure as opposed to the actual variables the measures represent (Podsakoff *et al.*, 2003; Podsakoff *et al.*, 2012). Previous researchers had identified issue of common method variance associated with TAM-based research (Sharma *et al.*, 2009). Specifically, Venkatesh *et al.* (2012) pointed out that, the relationship between perceived usefulness and technology use, was subject to high common method variance. Podsakoff *et al.* (2003) suggested that future research should adopt a more rigorous design to reduce measurement and method biases.

Thus, the researcher provided the briefing and background of the research, ensured confidentiality of the respondents, standardize the use of the seven-Likert scale and used right wording of the question that match the background of the topic. In the current study, Harman's single factor test was performed with 46 items of the variables in the study indicated that no single factor found in the Total Variance Explained Table over 50 percent of the variance (see Appendix A4.1). The result, 37.45 percent of variance showed that issue of common method variance was not exist in this study.

4.6 Demographic Profile of the Respondents

This section reported valuable information about the research settings that enabled the researcher to make decisions about the soundness of the choices made and conclusions made. Besides, it enabled readers to make comparisons with other research resulted in the same study. Therefore, this section showed the demographic information about companies that participated in the questionnaire survey. Thus, background of the responding companies was examined.

Table 4.5
Demographic Profile of Respondents

Demography	Description	Responses N=198	Percentage
Position	Owner	140	71%
	Manager	53	27%
	Others	5	2%
Gender	Male	135	68%
	Female (Women-owned SMEs: 37)	63	32%
Age		Min: 21, Max: 62, Mean: 34.8, Mode: 29	
Online selling experience	Yes	189	96%
	No	9	4%
Online marketplace	Lelong	183	92%
	11Street	133	67%
	Lazada	118	60%
	Facebook	106	54%
	Carousel, Duriana, Shopee, ImSold	95	48%
	Own website with payment gateway	81	41%
	Mudah	67	34%
	Own website without payment gateway	41	21%
	Qoo10	35	18%
	Others (AkuLaku, Amazon, Ebay etc.)	16	8%
	Gemfive	14	7%
	Groupon (Fave)	7	4%
	Ensogo	5	3%
Where you target to sell to	West Malaysia	184	93%
	East Malaysia	170	86%
	Southeast Asia	30	15%
	International	43	22%
Year of selling Online	Experience≤1 year	13	7%
	1 year<Experience≤3 years	77	39%
	3 years<Experience≤5 years	68	34%
	Experience>5 years	40	20%
Valid SSM registration	Yes	187	94%
	No	11	6%
Physical stall and/or shop	Yes	82	41%
	No	116	59%
Core products	Home and Living	48	24%
	Mobile Gadget and Computer	43	22%
	Fashion	31	16%
	Baby and Kid	11	6%
	Outdoor and Sport	11	6%
	Office and Stationery	6	3%
	Others	48	24%

Table 4.5 (Continued)

Number of listing	Listings>2500	9	5%
	1001<Listings<2500	22	11%
	501<Listings<1000	32	16%
	101<Listings<500	63	32%
	51<Listings<100	25	13%
	21<Listings<50	28	14%
	Listings<20	19	10%
GST registered	Yes	62	31%
	No	136	69%
Sales per month	Sales>RM10000	56	28%
	RM5001<Sales<RM10000	38	19%
	RM1001<Sales<RM5000	57	29%
	RM501<Sales<RM1000	27	14%
	Sales<RM500	20	10%
Number of workers	Large: Workers>75	1	1%
	Medium: 31<Workers<75	8	4%
	Small: 6<Workers<30	30	15%
	Micro: Workers<5	159	80%
Accept dropshipper	Yes	146	74%
	No	52	26%

4.6.1 Responding Criteria

Criteria of being the unit of analysis of the research were the participants must be the decision maker of the companies, e-commerce adopter and the company must be a SMEs. To ensure the participants were the right respondents to the research, email addresses and mobile numbers that extracted from the registered member of the marketplaces must be the decision maker of the company either owner or manager. The email addresses and mobile numbers were the contacts of the first and second person of the company who able renewed the membership, submit the SSM documentation, bank account detail and most importantly signing the agreement with the marketplace operators.

Question#1 (Q1) indicated that 98 percent of 198 respondents were owner and manager of the company. Hence, five respondents (R41, R42, R74, R136 and R193) were disqualified because they were not the decision maker of the company. Q14 showed that approximately 99 percent of them were less than 75 employees which were categorized as SMEs. Thus, R52 who responded that her company had more than 75 employees will be removed from the list. Furthermore, SMEs can be further breakdown into medium, small and micro, which accounted for four percent, 15 percent and 80 percent respectively. This is consistent with the Malaysian SMEs distribution in medium, small and micro, which accounted for 2.3 percent, 21.2 percent and 76.5 percent, respectively.

94 percent of them had a valid SSM registration indicating that they fulfil the basic requirement to perform business activities in Malaysia. However, only 31 percent of them were GST-registered sellers. Interestingly, shop-less seller had higher percentage than the seller with physical stall or shop. 41 percent of them were categorized as "*click and mortar"* while 59 percent of them were categorized as "*pure-play".* Most of them had item listing between 101 to 500 items. "Home and Living", "Mobile Gadget and Computer" and "Fashion" were the top three categories of the selling.

4.6.2 Respondent Demographic Data

Among the 198 respondents, 68 percent of them are male. Women comprised 32 percent of the total number of the respondents. Two-third of the online businesses in the study were dominated by male. 37 of the female respondents were the owners of the e-commerce. This percentage, 19 percent of the women-owned SMEs was consistent with the 20.6 percent of SMEs were women-owned reported in the Malaysia Economic Census 2016. Finally, the age of respondents was between 21 to 62 years old with the mean and mode were 34.8 and 29.0 years, respectively.

4.6.3 Experience of Selling Online

As Q4 illustrated, 96 percent of 198 respondents had the experience of online selling the items or services. Seven percent were "beginners", 39 percent were "intermediate", 34 percent were "advanced" and 20 percent were "expert" sellers. Q5 revealed that the responding companies had multiple platform selling at Lelong, 11street and Lazada accounted for 92 percent, 67 percent and 60 percent respectively. Interestingly, 41 percent of respondents owned their website with payment gateway and 21 percent of respondents owned their website without payment gateway. These figures illustrated that 62 percent of the e-commerce practitioner had their owner company website. Besides, it was observed that m-commerce and s-commerce adoption were significant important with 48 percent and 54 percent of their practice, respectively. For cross border selling, Q6 stated that 15 percent and 22 percent of them had targeted to sell their products and services oversea, SEA and International, respectively.

4.7 Data Screening and Preliminary Analysis

Data screening in data analysis provided a solid groundwork and quality for obtaining significant results (Hair *et al*., 2010). Out of 202 questionnaires received two questionnaires were not valid due to incomplete response. These incomplete questionnaires were excluded from further data analysis (Hair *et al.*, 2010). After that, these 200 questionnaires will be continued for further analysis. This total response was suitable to be utilized in the subsequent data analysis.

4.7.1 Missing Value Analysis

The data set had no missing value except Q2 has the issue of inappropriate data feedback. In Q2, R7 and R88 did not provide their age by submitting "2+" and "N/A", respectively. Missing data could because of several reasons, such as, misunderstanding of the questions, did not know the right answer, data entry error and not willing to answer the question (Hair *et al.*, 2010). The R7 and R88 were fall under the data entry error and not willing to answer the question, respectively. In these cases, the number of missing values for R7 and R88 did not more than two percent, therefore, mean value replacement was adopted because the impact of missing values was very small (Hair *et al.*, 2014a). The two missing values were replaced by the mean value of the sample's age, 35 years old rather age mode was 29 years old.

4.7.2 Outlier

Outliers were individuals who had such extreme scores on an individual variable, or on a set of variables, that they would distort the overall results. By calculating Mahalanobis distance for each respondent from SPSS, if the Mahalanobis d-square distance was greater than a critical value, they were deemed to be Multivariate Outliers.

Cases with the highest d-squared was the outliers and might delete them from the analysis. This new variable (MAH_1) represented the Mahalanobis distance (D^2) for each respondent. If the D^2 value was small than critical value, χ^2, then that respondent was not a multivariate outlier. If the D^2 value was larger than critical value, χ^2, the respondent was a multivariate outlier. df = 6, $\chi^2 = 22.46$, p = 0.001. In this case, six variables were entered as variables, and so any individual with a D^2 which is greater than $\chi^2 = 22.46$ would be considered a multivariate outlier and may be excluded from further analysis using this set of variables. Multivariate Outliers R61, R54, R31 and R136 were removed.

4.7.3 Descriptive Analysis

After treatment on the missing value, outlier, multiple entry and unengaged respondents, number respondent of the survey after considering the data screening was 184. Respondents' perspective on every variable, namely, performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC) and perceived risk (PR), Use of e-commerce (UE) and SME performance (SP) were provided with general descriptive statistics on each survey item as follows.

Table 4.6
Descriptive Statistics for Indicators and Latent Variables

Construct	Indicator/ Item	N	Minimum	Maximum	Mean	Std. Deviation
Performance Expectancy	PE1	184	4	7	6.2011	.92789
	PE2	184	2	7	6.2147	.96033
	PE3	184	3	7	6.1386	1.00739
	PE4	184	3	7	6.0598	1.00502
	PE5	184	1	7	5.9783	1.19290
	PE6	184	3	7	6.0027	1.03820
	PE	184	3.83	7.00	6.0992	.85846
Effort Expectancy	EE1	184	2	7	5.3098	1.12557
	EE2	184	2	7	5.4375	1.09652
	EE3	184	2	7	5.3451	1.13160
	EE4	184	2	7	5.3397	1.14046
	EE5	184	1	7	5.7446	1.26209
	EE6	184	1	7	5.4592	1.40733
	EE	184	2.67	7.00	5.4393	.96387
Social Influence	SI1	184	1	7	5.5516	1.32908
	SI2	184	2	7	5.8478	1.07693
	SI3	184	1	7	5.5054	1.44950
	SI4	184	1	7	5.8560	1.10743
	SI5	184	1	7	5.3668	1.27714
	SI6	184	1	7	4.8995	1.80828
	SI	184	3.17	7.00	5.5045	.94046
Facilitating Condition	FC1	184	2	7	5.2228	1.29809
	FC2	184	1	7	4.5000	1.70262
	FC3	184	1	7	5.0788	1.50247
	FC4	184	1	7	5.0951	1.50334
	FC5	184	3	7	5.9973	1.02762
	FC6	184	2	7	5.8668	1.09641
	FC	184	2.33	7.00	5.2935	.91000
Perceived Risk	PR1	184	1	7	4.0082	1.79744
	PR2	184	1	7	3.4701	1.75646
	PR3	184	1	7	3.3397	1.82278
	PR4	184	1	7	3.4293	1.85996
	PR5	184	1	7	3.8587	1.83518
	PR6	184	1	7	3.6576	1.74843
	PR	184	1.00	7.00	3.6273	1.28929

Table 4.6 (Continued)

Use of e-commerce	UE1	184	4	7	6.3288	.81769
	UE2	184	3	7	6.0707	.99749
	UE3	184	2	7	5.9946	1.02694
	UE4	184	2	7	6.0788	1.00029
	UE5	184	4	7	6.0245	.96987
	UE6	184	3	7	6.2011	.89796
	UE	184	4.00	7.00	6.1164	.84675
SME Performance	SP1	184	1	7	5.6304	1.15557
	SP2	184	1	7	5.4266	1.25615
	SP3	184	1	7	5.3234	1.18739
	SP4	184	1	7	5.4212	1.21153
	SP5	184	1	7	5.2853	1.35354
	SP6	184	1	7	5.1902	1.20641
	SP7	184	1	7	5.4973	1.15883
	SP8	184	1	7	5.4321	1.16154
	SP9	184	1	7	5.3234	1.26967
	SP10	184	1	7	4.8940	1.52427
	SP	184	1.90	7.00	5.3424	1.01725

Table 4.6 represented a descriptive statistic result for all constructs of the research e.g. minimum, maximum, mean and standard deviation. All the constructs had the mean ranged from 3.6273 to 6.1164 and the standard deviation ranged from 0.84675 to 1.28929. Additionally, the mean of performance expectancy was 6.0992 and standard deviation was 0.85846. Furthermore, the effort expectancy's mean and standard deviation were 5.4393 and 0.96387, respectively. Social influence's mean was 5.5045 and the standard deviation was 0.94046. For facilitating condition, the mean was 5.2935 and standard deviation was 0.91000. Also, for the perceived risk, the mean was 3.6273, but the standard deviation was 1.28929. Moreover, 6.1164 and 0.84675 were the mean and the standard deviation of use of e-commerce, respectively. Finally, 5.3424 and 1.01725 were the mean and the standard deviation of SME performance, respectively.

4.8 Justification of Using PLS-SEM

SEM is a flexible statistical procedure for testing hypotheses about relationships between variables in a research model. Partial Least Square-Structural Equation Modeling (PLS-SEM) is a statistical procedure for studying multivariate relationship between latent and observed variables. PLS-SEM deals with multiple DVs as well as multiple IVs. PLS-SEM is robust to non-normality and small sample size while CB-SEM not (Sarstedt *et al*., 2011; Hair *et al*., 2014a).

Another advantage of using the PLS-SEM is the simultaneously analyse the formative and reflective constructs. It is essential to note that model configuration in either formative or reflective, is important because approach in testing reflective construct is different from approach used in testing formative construct (Lowry & Gaskin, 2014; Hair *et al*., 2014b). In this research, all the indicators of latent variables were reflective. The analysis did not involve testing second-order. The construct of this study for the inner model were first order constructs. The current study consisted of five exogenous latent variables namely PE, EE, SI, FC and PR. The endogenous variable in this study was the dependent variable SP.

4.9 Measurement Model (Outer Model)

Measurement model or outer model was the part of a research model that explained the relationships between a latent variable (construct) and its indicators (items). First step in using the PLS-SEM analysis was to conduct the assessment on the outer model. The assessment on the outer model confirmed that the items had measured and produced the

right result for a construct. Thus, it led to conclude that the respective construct was reliable and valid. Hence, reliability and validity were the two main processes in using the PLS-SEM analysis to evaluate the outer model. Good reliability and validity of the measures produced a better quality about the prediction of the relationship among constructs (inner model). The outer model could be assessed by looking at internal consistency reliability using composite reliability (CR), convergent validity of a construct using average variance extracted (AVE), and discriminant validity using Fornell-Larcker criterion (Fornell & Larcker, 1981).

The coming SmartPLS's result illustrated about the loading, reliability and validity of the research. Hence, the measurement model's validity was satisfactory in the research when following steps fulfilling the criteria below. First step, item's loading was over than 0.35 for indicator reliability criteria (Yu *et al.*, 2015). Second step, CR was not less than 0.70 for internal consistency criteria (Cheung & Wang, 2017; Hair *et al.*, 2014a). Third step, construct's AVE value was greater than 0.50 for convergent validity criteria (Hair *et al.*, 2014a). Fourth step, AVE's square root must greater than the correlations between the construct and other constructs for the Fornell-Larcker criteria (Fornell & Larcker, 1981). Fifth step, item's cross loading of each indicator was highest for its assigned construct in the discriminant validity criteria. Sixth step, Heterotrait-Monotrait Ratio (HTMT) must lower than 0.9 (Gold *et al*., 2001).

4.9.1 Individual Items Reliability

First step, the researcher examined loading and cross loadings of all items of the study variables to serve as a pre-requisite for measurement model. Then, the measurement model was undertaken to ensure about the model validity and reliability. All the measurements of the constructs were adapted from past literature. Thus, this research considered only confirmatory factor analysis (CFA) by using SmartPLS (Ringle *et al.*, 2015).

Table 4.7 and Figure 4.1 indicated that all factor loading values exceeded the criteria of 0.35 (Yu *et al.*, 2015). However, factor loading's value that below 0.50 must be deleted one by one starting with lowest value. Hair *et al.* (2012) recommended that procedure was employed to improve the quality of overall data. The findings highlighted that out of 46 items, 10 items were removed as their loadings were less than the value of 0.50. Thus, the modified model left with 36 items was within the range of 20 percent deletion of lower factor loadings. The modified model's loadings were retained ranging from 0.506 to 0.931 (Hair *et al*., 2014).

Table 4.7
Construct Validity and Reliability

Construct	Item	Factor Loading	CR	AVE
PE	PE1	0.931	0.952	0.833
	PE2	0.928		
	PE3	0.924		
	PE6	0.865		
EE	EE1	0.844	0.902	0.649
	EE2	0.811		
	EE3	0.800		
	EE5	0.758		
	EE6	0.813		
SI	SI1	0.716	0.857	0.547
	SI2	0.780		
	SI3	0.774		
	SI4	0.635		
	SI5	0.780		
FC	FC1	0.700	0.822	0.545
	FC4	0.506		
	FC5	0.875		
	FC6	0.818		
PR	PR1	0.629	0.855	0.543
	PR2	0.718		
	PR3	0.791		
	PR5	0.767		
	PR6	0.770		
UE	UE2	0.912	0.956	0.844
	UE3	0.931		
	UE4	0.910		
	UE5	0.921		
SP	SP1	0.839	0.953	0.693
	SP2	0.875		
	SP3	0.872		
	SP4	0.877		
	SP5	0.832		
	SP6	0.785		

	SP7	0.768
	SP8	0.894
	SP9	0.735

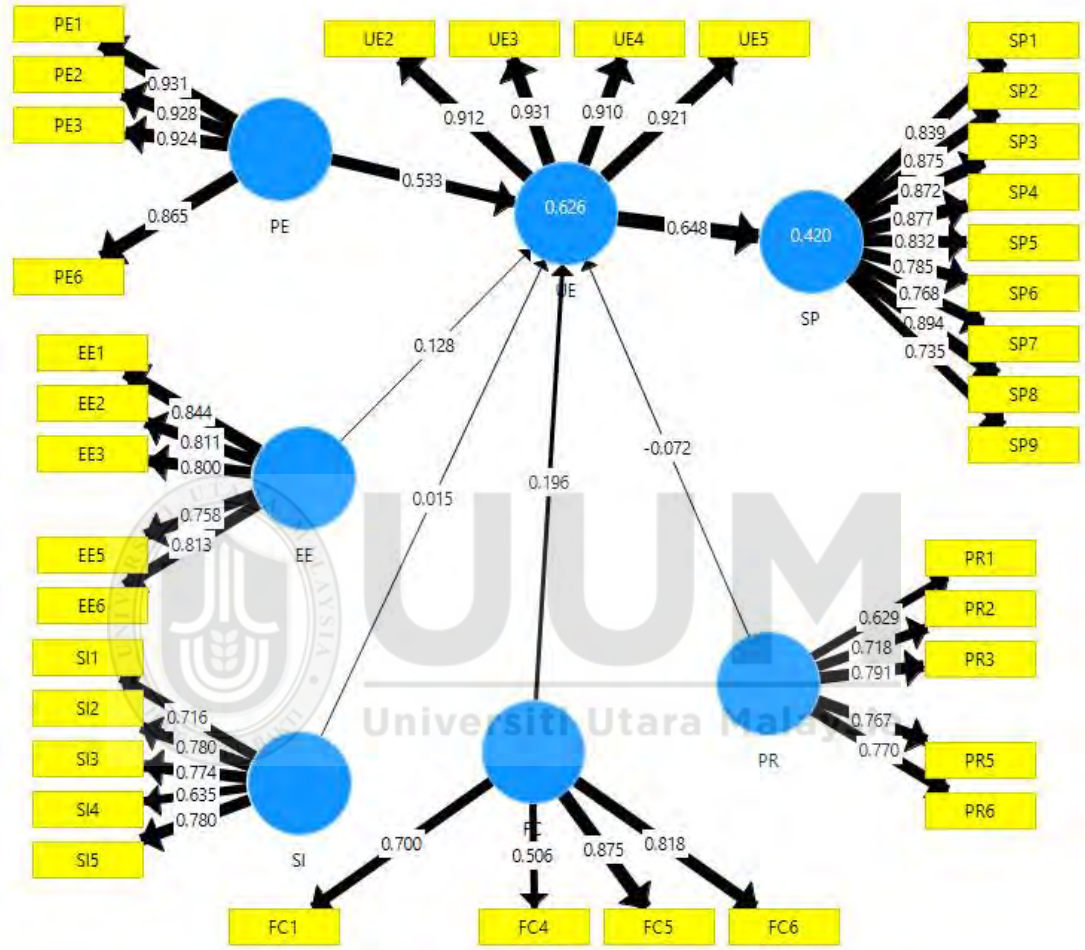

Figure 4.1
Structural Model – PLS Algorithm

4.9.2 Internal Consistency Reliability

Second step, composite reliability (CR) was studied. Internal consistency reliability referred to the "extent to which all items on a particular sub scale are measuring the same concept" (McCrae *et al.*, 2011). The acceptance criteria of CR value must be at least 0.70 (Fornel & Larcker, 1981; Hair *et al.*, 2014a). Third step, the acceptance criteria of AVE must be more than 0.50 (Fornel & Larcker, 1981; Hair *et al.*, 2014a).

In Table 4.7, all the CR values were reported exceed the recommended standard value of 0.70 (Cheung & Wang, 2017; Hair *et al*. 2014a). According to Nunnally and Bernstein (2007), CR value between 0.70 and 0.90 was regarded as more adequate. In this research, the range of CR values of the research was between 0.822 and 0.956. Thus, the CR values indicated that the measurement model of this research had more adequate reliability.

AVE convergent validity value must exceed the criteria of 0.50 (Hair *et al*. 2014a). AVE value of 0.50 indicated its latent construct explained half of the variance of its indicators and indicates adequate convergent validity (Hair *et al*. 2014a). The result which fulfilled the AVE and CR criteria, indicated that the measurement model was highly reliable.

4.9.3 Discriminant Validity

Fourth step, AVE's square root must greater than the correlations between the construct and other constructs for the Fornell-Larcker criteria (Fornell & Larcker, 1981). Farrell

and Rudd (2009), defined discriminant validity as "the extent to which a particular latent variable is discriminated from other latent variables". Discriminant validity was used to confirm the external consistency of the model. In current study, discriminant validity was studied by comparing the correlation among the latent constructs with the AVE square root (Fornell & Larcker, 1981). Hence, the comparison among the latent constructs as explained in Table 4.8 summarize the AVE square root of the constructs: performance expectancy (PE) = 0.912; effort expectancy (EE) = 0.806; social influence (SI) = 0.739; facilitating condition (FC) = 0.739; perceived risk (PR) = 0.737; use of e-commerce (UE) = 0.918 and SME performance = 0.833. All AVE's square roots were greater than the correlations between the construct and other constructs for the Fornell-Larcker criteria in Table 4.8. Hence, with these conditions were met, there had been discriminant validity evidence.

Table 4.8
Discriminant Validity

	PE	EE	SI	FC	PR	UE	SP
PE	**0.912**						
EE	0.534	**0.806**					
SI	0.583	0.568	**0.739**				
FC	0.653	0.641	0.656	**0.739**			
PR	-0.213	-0.209	-0.131	-0.162	**0.737**		
UE	0.753	0.562	0.536	0.647	-0.246	**0.918**	
SP	0.617	0.528	0.58	0.579	-0.141	0.648	**0.833**

Fifth step, item's cross-loading of each indicator was the highest for its construct. And, results of the cross-loading table observed that all the bold values of the loading exceed the threshold suggested level of 0.50 and above. Sixth step, Table 4.9 showed that

indicating that discriminant validity had been ascertained as none of the HTMT values were greater than 0.9. Hence, the outcomes showed satisfactory reliability and validity of the measurement model.

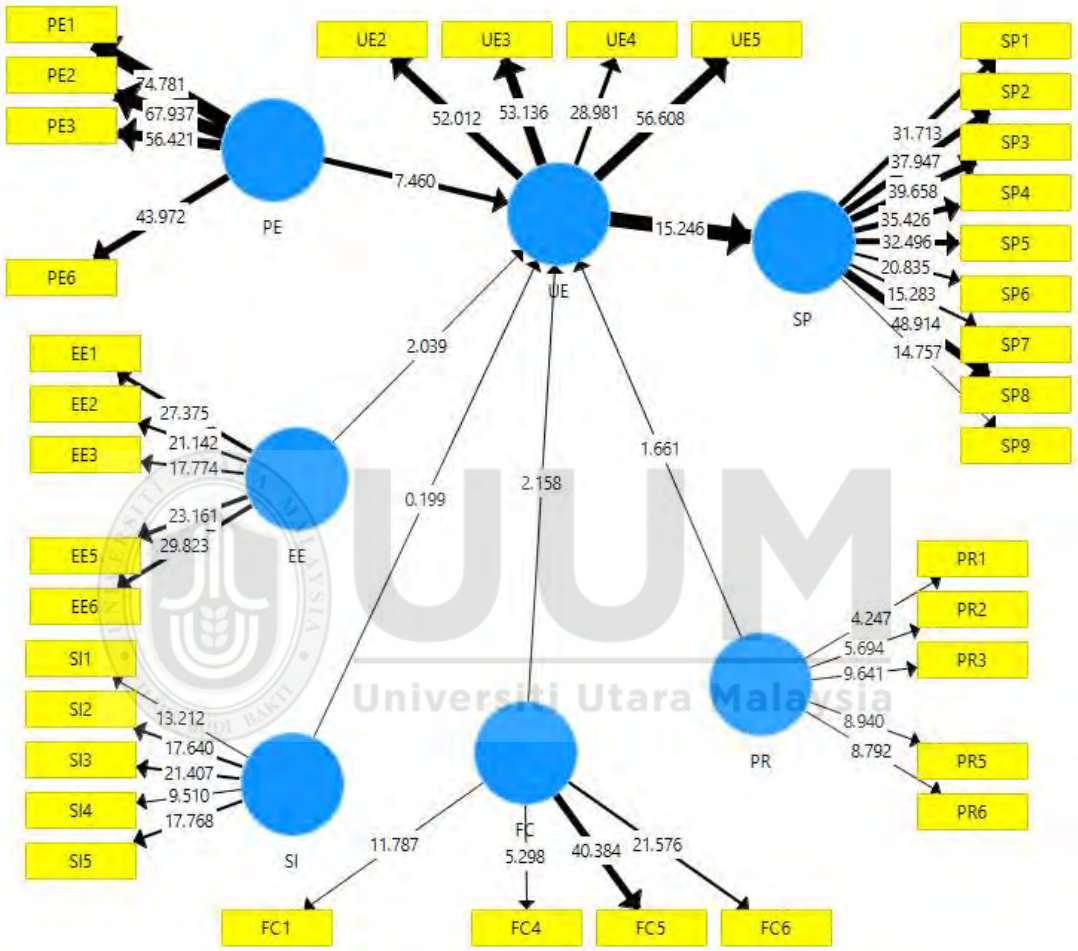

Figure 4.2
Structural Model – Bootstrapping.

Table 4.9
Heterotrait-Monotrait Ratio (HTMT)

	PE	EE	SI	FC	PR	UE	SP
PE							
EE	.577 (.476, .665)						
SI	.680 (.594, .753)	.666 (.548, .763)					
FC	.753 (.642, .845)	.795 (.704, .875)	.872 (.778, .952)				
PR	.207 (.119, .291)	.209 (.117, .302)	.202 (.111, .237)	.192 (.104, .234)			
UE	.804 (.734, .861)	.599 (.511, .678)	.618 (.514, .710)	.747 (.649, .826)	.244 (.140, .356)		
SP	.654 (.563, .729)	.575 (.478, .660)	.670 (.561, .757)	.686 (.573, .785)	.137 (.074, .156)	.683 (.604, .751)	

4.10 Structural Model (Inner Model)

After the criteria satisfactory of the measurement model (outer model) obtained, the researcher continued to carry out the analysis via structural model (inner model). This section explained about the structural model (inner model). Structural equation modelling (SEM) analysed the direct relationship between the variables by analysing their t-values and path coefficients. Besides, in the current study, two structural model assessments had been done, which were a direct relationship model and mediation analysis model.

4.10.1 Assessment of Path Coefficient

The association between two latent variables can be examined by the characteristic of the path coefficient (beta coefficient, regression coefficient or structural slope) e.g. algebraic sign, magnitude and significance (Ullah, 2017, Assaker *et al*., 2012). The path coefficient was the standardized beta coefficient in regression analysis. The result of the analysis on the relationships was shown in the Figure 4.1 and Table 4.10.

Table 4.10

Summary of the Result of Hypothesis Testing

Relationship	Beta	Stdev	T value	P value	Hypothesis	VIF	R^2	Q^2	F^2	Effect
H1: PE -> UE	.533	.071	7.460	.000**	Supported	1.945			.391	Strong
H2: EE -> UE	.128	.062	2.039	.019*	Supported	1.879			.023	Weak
H3: SI -> UE	.015	.072	0.199	.420	Not Supported	1.986	.626, Substantial effect	.491	.000	No
H4: FC -> UE	.196	.090	2.158	.015*	Supported	2.482			.041	Weak
H5: PR -> UE	-.072	.044	1.661	.044*	Supported	1.063			.013	Weak
H6: UE -> SP	.648	.042	15.246	.000**	Supported	1.000	.420, Substantial effect	.269	.725	Strong

** p<0.01; * p<0.05

Firstly, in direct proportional, a positive sign of a path coefficient interpreted that for every 1-unit increased in the independence variable, the dependence variable would increase by the path coefficient value (IV∝DV). Oppositely, in an inverse proportional, a negative path coefficient interpreted that for every 1-unit increased in the independence variable, the dependence variable would decrease by the path coefficient value ($IV \propto DV^{-1}$). In the observation, all algebraic signs of path coefficient were positive in value except perceived risk. In other words, inverse proportional meant increase in sellers' perceived risk reduced the use of e-commerce, $PR \propto UE^{-1}$. The rest of the variables were directly proportional to use of e-commerce (PE∝UE, EE∝UE, SI∝UE and FC∝UE). Use of e-commerce was directly proportional to SME performance (UE∝SP). Inverse proportional relationship between perceived risk and use of e-commerce was observed and consistent with the result shown path coefficient.

Secondly, the absolute magnitude of beta coefficient, or path coefficient was the degree of change in the dependence variable for every 1-unit of change in the independence variable ($\frac{DV}{IV}$). To make the unit of change produced realistic interpretation, same 7-likert scale was used across all the latent variables. A larger absolute value always indicated a stronger effect. For instance, beta coefficient for UE->SP was 0.648 (p=0.000), then for each 1-unit increase in the use of e-commerce, the SME performance would increase by 0.648 units. However, for an absolute value of path coefficient that larger than 1, this could be due to multicollinearity. In the observation, relationship between use of e-commerce and SME performance posted largest value, 0.648 but it was less than 1. Thus, no multicollinearity was observed. It can be affirmed by the observation of no VIF value was more than 5 in Table 4.10.

4.10.2 Assessment of Significance of the Structural Model Direct Relationships

Structural model was assessed to study the dependence of the relationship in the hypothesized model. t-values were examined to decide the significance of the relationships. The t-values in the current research had resulted from the bootstrapping with 5000 sampling iterations. For a relationship where t-value greater than 1.64, it was considered as posted a significant relationship (Hair *et al*., 2014a).

Figure 4.2 revealed the direct influence of every construct on SME performance via SmartPLS output about the path p-value, t-value, coefficient value also the standard errors. Based on these values from Figure 4.2 and Table 4.10, the hypothesis decision has been made. In current research five hypotheses from the first objective had been tested. Out of five hypotheses, four hypotheses were proved supported (H1, H2, H4 & H5) and only one were considered not supported (H3) based on the recommended t-value. Meanwhile, one hypothesis from the second objective had been tested and proved supported (H6).

According to H1, the result in Table 4.10 suggested that there was a significant influent of PE on UE (β=0.533, t=7.543, p=0.000) hence, H1 was supported (VIF=1.945, F-size=0.391). Hypothesis H2 was supported because the result indicated that significant influent of EE on UE (β=0.128, t=2.068, p=0.019, VIF=1.879, F-size=0.023). Differ from H2, H3 was not significant influent of SI on UE (β=0.015, t=0.201, p=0.420, VIF=1.986, F-size=0.000), thus H3 was not supported. With respect to H4, the result provided that there was a significant impact of FC on UE (β=0.196, t=2.168, p=0.015,

VIF=2.482, F-size=0.041) hence, H4 was supported. For H5, the result provided the evidence there is a negative relationship of PR and UE (β=-0.072, t=1.666, p=0.044, VIF=1.063, F-size=0.013). Hence, H5 was supported. Similarly, for H6 the result showed that there was a strong positive association between UE and SP (β=0.648, t=15.263, p=0.000, VIF=1.000, F-size=0.725). Therefore, H6 was supported.

The Table 4.10 illustrated that those hypotheses which were supported in this research have a p-value of less than 0.05 meanwhile those hypotheses which were not supported in this research have a p-value greater than 0.05. Figure 4.2 was completely explained in Table 4.10 that illustrated the influence of the variables on SME performance of using the e-commerce in Malaysia.

Utilizing SmartPLS, a structural model could be assessed to study the coefficient of determination R^2 and path coefficients Beta. R^2 measured the relationship of a latent variable to describe variance to its total variance. For the area of behavioral and social sciences, Cohen (1988) suggested that R^2 = 0.02, 0.13 and 0.26 were classified as a weak effect, moderate effect and substantial effect, respectively. The results of running the SmartPLS's PLS algorithm of the structural model was shown in Figure 4.1. As noted in Table 4.10 and Figure 4.1, all R^2 values were higher than 0.26, indicating a substantial effect.

Results in Table 4.10 indicated that the R^2 value of UE (0.626) was substantial and SP (0.420) was substantial effect too. UE's R^2 value combined all the five exogenous variables (PE, EE, SI, FC and PR) together in the model to explain 62.6 percent variance. Similarly, the SP's R^2 value indicated that all the six latent variables (PE, EE, SI, FC,

PR and UE) combined in the model explained 42.0 percent variance in the endogenous variable, SP. Consequently, based on the assessment of the R^2 of the endogenous latent variable SP (0.420) and UE (0.626), it was concluded that the research had substantial predictive validity.

4.10.3 Assessment of effect size (f^2)

Coefficient of determination (R^2) of criterion variable, the effect size (f^2) of each explanatory variable and the predictive relevance (Q^2) of the criterion variable were employed to investigate the strength of the model.

Effect size was defined "the relative effect of a specific independent latent variable on dependent latent variable by indicating changes in the R-squared" (Chin, 1998). In f^2 analysis, effect f-size valued of .02, .15, and .35 proposed weak effect, moderate effect and strong effects respectively (Cohen, 1988). As indicated in Table 4.10, the effect size for PE→UE, EE→UE, SI→UE, FC→UE, PR→UE and UE→SP, were .391, .023, .000, .041, .013 and .729 respectively. Thus, based on Cohen (1988), the effect sizes of these six relationships could be concluded as strong for PE→UE and UE→SP; weak for EE→UE, FC→UE and PR→UE; no effect for SI→UE. The result indicated that among the use of e-commerce predictors, performance expectancy had the highest f-size impact and social influence had the no f-size impact to use of e-commerce. Besides, use of e-commerce had significant impact to SME performance.

4.11 Mediation Analysis

Mediation was conducted for determining the effect mediating variable in enhancing the effect of the independent variables to the dependent variable (Hair *et al*., 2014a). Techniques were used for conducting the mediation test such as Baron and Kenny (1986), Sobel test and bootstrapping (Baron & Kenny, 1986; Sobel, 1982; Preacher & Hayes, 2004; Hayes, 2014). According to Baron and Kenny (1986), few conditions should be fulfilled to keep the true mediation exist (Step 1: $DV = c_1 + \beta_1 IV + e_1$ with β_1 is significant; Step 2: $M = c_2 + \beta_2 IV + e_2$ with β_2 is significant; Step 3: $DV = c_3 + \beta_3 IV + \beta_4 M + e_3$ with β_4 is significant and $\beta_3 < \beta_1$).

However, it was not always essential that the relationship between variables had direct effect as significant. Although, a significant indirect relationship may occur with mediation (Hayes, 2014). For instance, the four conditions of Baron and Kenny (1986) failed to involve the use of standard errors (Preacher & Hayes, 2004). Furthermore, assumption to run the Sobel's test required a normal distributed data and sampling distribution skewness could be problematic. In addition, the advantage of bootstrapping was that it did not require any presumption about the sample's distribution (Hayes & Preacher, 2010). In other words, the confidence interval (CI) in bootstrapping method could be asymmetrical rather than at regular CI in other methods. Bootstrapping or re-sampling mediation technique was a non-parametric re-sampling procedure. Hence, bootstrapping was selected in this research to test the indirect effect.

Bootstrapping was considered as one of the highest influential procedures for conducting the mediation test (Hayes, 2014). Moreover, bootstrapping was much

suitable in PLS-SEM since it can be applied on small sample size (Hair *et al.*, 2014). Besides, it worked well for simple and multiple models (Hair *et al.*, 2014).

Table 4.11
Mediation Effect

	Mediation	Beta	STDEV	T Value	P Values	5%	95%	Decision
H7a	PE→UE→SP	.346	.050	6.935	.000***	.265	.429	Mediation
H7b	EE→UE→SP	.083	.041	2.032	.042**	.015	.150	Mediation
H7c	SI →UE→SP	.009	.048	.196	.845	-.065	.092	No Mediation
H7d	FC →UE→SP	.127	.062	2.040	.041**	.028	.234	Mediation
H7e	PR→UE→SP	-.047	.028	1.652	.098*	-.096	-.003	Mediation

***: p<0.01; **: p<0.05; *: p<0.10

This research had examined the mediating variable with SmartPLS suggested by using the bootstrapping with resampling of 5000 (Ringle *et al.*, 2015). In this study, the mediating variable use of e-commerce was introduced to examine the impact of UE between the predictors and SP. The role of UE was examined as mediator by running the bootstrapping of Smart-PLS 3 to get the result of specific of indirect effects. Table 4.11 shows the result of the mediation effect of the use of e-commerce on the relationships between independent variable and dependent variable. The researcher tested indirect effect through two-tailed generating the 0.1 significant level based on 5000 bootstrap samples. The results of the mediation tests displayed in Table 4.11 indicated that UE mediates PE, EE, FC and PR had significant mediation on SP. SI had no mediation impact on SP.

The results of this research indicated that the direct effect of PE-SP with mediation role of UE was significant (LL = 0.265, UL = 0.429) which indicated that the lower limit (LL – 5 percent) and upper limit (UL – 95 percent) confidence interval between 5

percent to 95 percent of this mediation relationship did not exist zero. As a result, researcher concluded that use of e-commerce did mediate relationship with performance expectancy and SME Performance (H7a).

Furthermore, H7b was about the mediation relationship of use of e-commerce with effort expectancy and SME performance, the indirect effect of EE-SP with UE was significant having value of confidence interval (LL = 0.015, UL = 0.15). Both upper limit and lower limit in this relationship did not contain zero. Hence, the mediation role of use of e-commerce between effort expectancy and SME performance was supported.

H7c was about the mediation relationship of use of e-commerce with social influence and SME performance, the indirect effect of SI-SP with UE was not significant having value of confidence interval (LL = -0.065, UL = 0.092). Both upper limit and lower limits in this relationship, SI->UE->SP did contain zero. Thus, the mediation role of use of e-commerce between social influence and SME performance was not supported.

H7d was about the mediation relationship of use of e-commerce with facilitating conditions and SME performance, the indirect effect of FC-SP with UE was significant having value of confidence interval (LL = 0.028, UL= 0.234). Both upper limits and lower limits in this relationship, FC ->UE->SP did not contain zero. Thus, the mediation role of use of e-commerce between facilitating conditions and SME performance was supported.

H7e was about the mediation relationship of use of e-commerce with perceived risk and SME performance, the indirect effect of PR-IC with UE was significant having value of confidence interval (LL = -0.096, UL = -0.003). Both upper limits and lower limit in this relationship, PR ->UE->SP did not contain zero. Thus, the mediation role of use of e-commerce between perceived risk and SME performance was supported.

4.12 Assessment of Predictive Relevance of the Model

The blindfolding procedure was accomplished to evaluate the overall predictive capability of the model (Geisser, 1974; Stone, 1974). The predictive relevance could be evaluated by using Stone–Geisser criterion, which assumed predictive relevance Q^2 assessment that an inner model must be able to provide prediction evidence of the endogenous indicators (Henseler et al., 2009). Q^2 assessment could be carried out using the SmartPLS blindfolding procedures to obtain the cross-validated redundancy measure for endogenous latent construct (Henseler *et al.*, 2009; Henseler *et al.*, 2014). Q^2 values which greater than zero indicated the model had predictive relevance, while Q^2 values which less than zero, indicated the model be deficient in predictive relevance (Henseler *et al.*, 2009 & 2014). Table 4.10 illustrated that all the Q^2 values were greater than zero for use of e-commerce (0.491) and SME performance (0.269). The results suggested a substantial predictive relevance of the research.

4.13 Summary

This chapter reported the statistical analysis of questionnaire distributed to owners and manager of the e-commerce adopter in Malaysia. Then, the raw data was data-screening such as missing value treatment, removing and averaging the multi entry, removing the

unengaged respondents, assessment of outliers, common method variance and multicollinearity assessment. This chapter further analysed the descriptive analysis of the respondents and testing non-response bias for early and late batch. Next, usage of SmartPLS was justified. Then, it followed by the measurement model as well as the structural model which were measured with PLS-SEM using the SMART PLS-SEM 3.0 software package. Finally, result about hypotheses testing were reported and summarized in Table 4.12 and Figure 4.3.

Table 4.12
Research Hypothesis Findings

	Hypothesis	Decision
H1	Performance expectancy has an influence on the use of e-commerce	**Supported**
H2	Effort expectancy has an influence on the use of e-commerce	**Supported**
H3	Social influence has an influence on the use of e-commerce	**Not Supported**
H4	Facilitating condition has an influence on the use of e-commerce	**Supported**
H5	Perceived risk has an influence on the use of e-commerce	**Supported**
H6	Use of e-commerce has an influence on SME performance	**Supported**
H7a	The relationship between performance expectation and SME performance is mediated by the use of e-commerce	**Supported**
H7b	The relationship between effort expectation and SME performance is mediated by the use of e-commerce	**Supported**
H7c	The relationship between social influence and SME performance is mediated by the use of e-commerce	**Not Supported**
H7d	The relationship between facilitating condition and SME performance is mediated by the use of e-commerce	**Supported**
H7e	The relationship between perceived risk and SME performance is mediated by the use of e-commerce	**Supported**

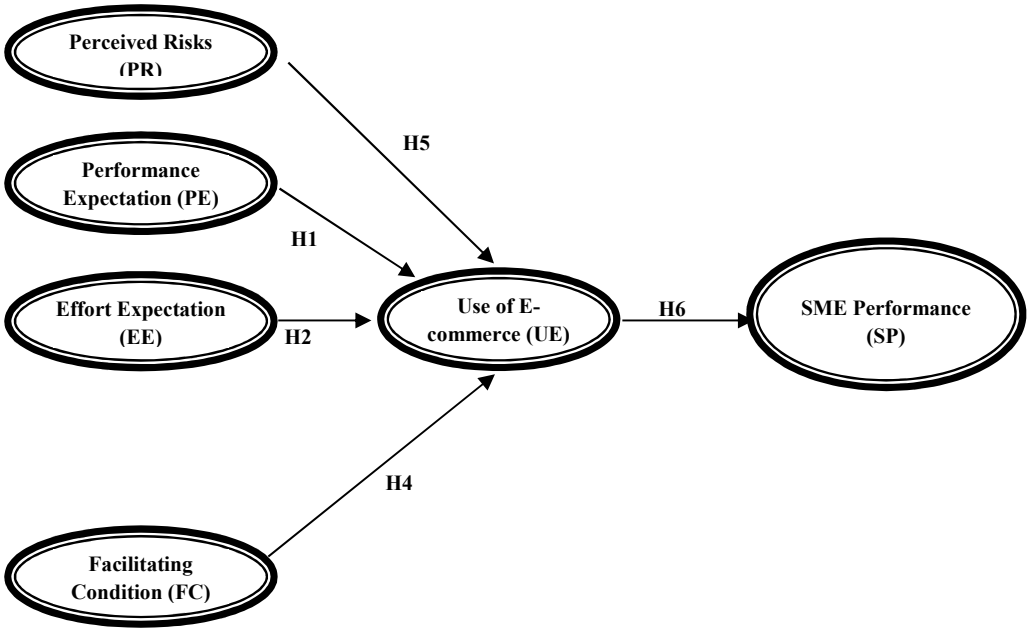

Figure 4.3
Finalized Research Framework

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter discusses the findings to draw conclusions for this research. First, it will summarize this research and recall the research background, research objective, research methodology and as well as data analysis. Moreover, this chapter contains a discussion focusing on the details and the conclusion based on data analysis using PLS-SEM to fulfill the research objectives. This chapter also discusses the implications of this research on widening the theoretical and practical gaps presented in the previous chapters. Lastly, this chapter presents the limitations, recommendation and conclusion on the influences of different factors in the of e-commerce to increase the performance of Malaysian SMEs.

5.2 Recapitulation of this Study

Malaysian SMEs are gradually moving towards digital transformation with the vision to improve the SME performance through e-commerce. In this regard, the performance of SMEs can be improved by introducing the electronic operation system. In realizing this digital transformation, Malaysian Government has demonstrated a huge effort in preparing the digital environment to guide the SME to prepare them for the transformation. Unfortunately, such efforts towards the digitalization have seemed to be unfruitful; the Malaysian SMEs still lack the full digital capability to use matured e-commerce resources to improve their performance. This low rate of e-commerce adoption observed has slowed the rate of digitalization in improving the performance-

oriented business environment. Hence, this study has examined the factors which influence the use of e-commerce by SMEs to improve their business performance.

Despite all the infrastructure investment in the development toward a better, improve and easier to do business electronically, the use of e-commerce generally remained in low adoption. E-commerce usage by the business owner was seriously underused despite most of them aware about the availability and improvement of the technology. Thus, there is a desperate need to understand the factors of the use of e-commerce by SMEs. Even though there are several studies have been conducted in Malaysia to address the issue on the low rate of e-commerce adoption through surveys involving SME owners, yet, there is still limited literature on the issue. Thus, this research attempts to answer the key questions to provide comprehensive empirical answers on the major factor contributing to the low use of e-commerce to increase SME performance.

To recall, this study has been developed to fulfil the following objectives: (1) to examine the relationships between factors (performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk) and use of e-commerce; (2) to examine the relationships between use of e-commerce and SME performance; and (3) to examine the use of e-commerce mediation on the relationship between performance expectancy, effort expectancy, social influence, facilitating condition and perceived risk on SME performance.

The underpinning theories applied in conducting this research comprise of resource-based view (RBV) and Unified theory of Acceptance and Use of Technology (UTAUT).

RBV explains that the high digital capability of using e-commerce could improve the SME performance. In this regard, the use of e-commerce is determined by factors outlined in UTAUT. These theories were combined as the SMEs operators are deemed as the existing adopters who were right unit analysis who understand well about the SME performance before and after the adoption.

Furthermore, when a technology involved the monetary transaction, there will be some perceived risks by SME business owner to use e-commerce existed in the scope of security risk, economic risk and functional risk. To think out of a box, it is necessary to introduce perceived risk into the scope of study lacking in previous research. Hence, to fill up the gap, a certain modification and extension of the UTAUT model were required in this research where it could provide more guidance to industry and policy-makers to promote e-commerce usage in Malaysia. By introducing a new factor, perceived risk was expected to provide more effective guidance in understanding the factors of use of e-commerce as proposed in this study.

In total, 1,595 companies have officially registered their profiles in the Malaysian e-marketplaces. 2,448 questionnaires have been delivered to the prospective respondents and the data collection took 143 days to complete. Finally, the questionnaire survey yielded 202 responses. Therefore, the response rate of the returned questionnaires is only 12.66 percent. The incomplete questionnaire was excluded. Thus, the response rate for usable and final questionnaires to the analysis is 11.54 percent. The questionnaire was designed using seven-point Likert scale which was anchored by "strongly disagree" (1) to "strongly agree" (7). All of instruments used were adapted

and adopted from the literature and modified them to suit the scope of research in Malaysia. The questions were designed to probe on the constructs that would determine the SME performance and use of e-commerce. As for this research, the UTAUT model was modified to represent the situation of use of e-commerce in Malaysia.

5.3 Discussion

5.3.1 Objective 1: Direct Relationship between Factors and Use of E-commerce

The scope of this research is to determine the relationship between the use of e-commerce relating to the factors of performance expectancy, effort expectancy, social influence, facilitating conditions and perceived risk. This is to address the level of use of e-commerce among e-commerce adopters. The explanatory power of this model was studied via the R-value for use of e-commerce. The combination of all the factors (PE, EE, SI, FC and PR) accounted for 62.6 percent of the variance observed in SMEs use of-commerce. As expected, the model explains a moderate amount of the variance led to the substantial effect. This result is highly consistent with the results of previous research with reported the direct effects model of 70.0 percent (Venkatesh *et al*., 2003). Yu (2012) reported 65.1 percent of variances explained in Taiwan's m-banking adoption while Zhou *et al*. (2010) reported that 57.5 percent of the variances were explained in m-banking adoption in China. Thus, this result reflects the reasonable accepted percentage of variance explained.

The large effect size f^2 on the level of use of e-commerce was shown by performance expectancy while the small effect size f^2 on the level of use of e-commerce was shown by effort expectancy, facilitating condition and perceived risk; while social influence

showed no effect size f^2 on the level of use of e-commerce. For our path model, the predictive relevance Q^2 has a value of 0.491, which indicates the model has large predictive relevance for these relationships. Meanwhile, For the relational hypothesis in this study, all factors related to use of e-commerce have been supported, except for social influence.

5.3.1.1 Performance Expectancy (PE) and Use of E-commerce (UE)

According to H1, the result in Table 4.12 suggests that performance expectancy significantly influences the use of e-commerce (β=0.533, t=7.543, p=0.000). Hence, H1 was supported (VIF=1.945, F-size=0.391). Performance expectancy significantly influences the use of e-commerce. According to the findings of Venkatesh *et al*. (2003), the performance expectancy constructs derived from UTAUT has a significant positive influence on the use behaviour. This is also shown by previous ICT-related works (Adam *et al.,* 2011; Indahwati & Afiah, 2014; Moghavvemi *et al.,* 2011; Mursalin, 2012; Ndayizigamiye, 2013; Peris *et al.,* 2013; Tai & Ku, 2013; Serben, 2014; Mbrokoh, 2015; Jaradat & Rababaa, 2013; Jambulingam, 2013; Williams, 2009). Performance expectancy was found to be a significant contributing factor in this research with f^2 of 0.391. Hence, e-commerce adopters agreed that using e-commerce could increase their job performance, perceived usefulness, extrinsic motivation, outcome expectation and job-fit within the context of an organization.

5.3.1.2 Effort Expectancy (EE) and Use of E-commerce (UE)

Hypothesis H2 was supported because the result indicates the significant influence of effort expectancy on use of e-commerce (β=0.128, t=2.068, p=0.019, VIF=1.879, F-

size=0.023). Effort expectancy significantly influences the use of e-commerce According to the findings of Venkatesh *et al*. (2003), the effort expectancy constructs derived from UTAUT has a significant positive influence on the use behaviour. This is also shown by other IT-related literature (Adam *et al.,* 2011; Indahwati & Afiah, 2014; Mursalin, 2012; Ndayizigamiye, 2013; Peris *et al.,* 2013; Li *et al*., 2014; Tai & Ku, 2013; Mbrokoh, 2015; Jaradat & Rababaa, 2013; Chiu & Ku, 2015; Williams, 2009). Effort expectancy was found to be a significant factor in this research with f^2 of 0.023. Undoubtedly, e-commerce adopters do highly expect that the use of e-commerce should be effortless. This means that e-commerce adopters are driven to use e-commerce if they perceive the experience as pleasant, enjoyable, easy, simple fun and will make work more interesting.

5.3.1.3 Social Influence (SI) and Use of E-commerce (UE)

In contrast from H2, H3 shows the insignificant influence of social influence on the use of e-commerce (β=0.015, t=0.201, p=0.420, VIF=1.986, F-size=0.000), thus, H3 was not supported. As evident from the previous literature, the role of social influence construct has been controversial. Social influence such as, "people around me", "people who are important to the company", image, attitude toward word-of-mouth (online), attitude towards the website (image) and peer: business partner/competitor were used as scale items in this research. The result indicates that social influence is not a significant factor for the use of e-commerce.

These results contradict the findings in the previous-related study (Adam *et al.,* 2011; Indahwati & Afiah, 2014; Mursalin, 2012; Ndayizigamiye, 2013; Peris *et al.,* 2013; Li *et al*., 2014; Tai & Ku, 2013; Serben, 2014; Mbrokoh, 2015; Jaradat & Rababaa, 2013; Williams, 2009). However, the current result is in line with Chiu & Ku (2015), Gagnon *et al.* (2012) and Jambulingam (2013) that indicated that social influence has no significant influence on the use of e-commerce. The mean age of e-commerce adopter in this research is 34.8 and a mode age of 29. This generation is largely dominated by computers, video games and mobile phones, hence, the influence of their peers is not significant as they might already aware about the existence of e-commerce. This shows that people in this digital generation might not be influenced by their peers as they are often the early adopters of a newly innovated technology. This pattern reflects that the social influence does evolve over time and could help in explaining some of the observation reported in the literature.

5.3.1.4 Facilitating Condition (FC) and Use of E-commerce (UE)

H4 shows that there is a significant impact of facilitating conditions on use of e-commerce (β=0.196, t=2.168, p=0.015, VIF=2.482, F-size=0.041) hence, H4 was supported. The presence of facilitating conditions significantly influences the use of e-commerce. According to the findings of Venkatesh *et al*. (2003), the facilitating condition constructs derived from UTAUT has a significant positive influence on the use behaviour, as well as the previous ICT-related literatures (Adam *et al.,* 2011; Indahwati & Afiah, 2014; Mursalin, 2012; Tai & Ku, 2013; Serben, 2014; Williams, 2009). Facilitating condition was found to be a significant contributing factor in this research with f^2 of 0.041. Hence, e-commerce adopters agreed that they will use e-commerce when adequate resources are given, guidance and assistance are available and using the use of e-commerce fits into their way of doing business.

5.3.1.5 Perceived Risk (PR) and Use of E-commerce (UE)

For H5, the result provided the evidence there was a negative relationship between perceived risk and use of e-commerce (β=-0.072, t=1.666, p=0.044, VIF=1.063, F-size=0.013). Hence, H5 was supported. Perceived risk significantly influences the use of e-commerce. According to the findings of previous ICT-related studies (Azam & Quaddus, 2009; Tai & Ku, 2013; Zhou, 2012; Luo *et al.,* 2010; Wessels & Drennan, 2010; Featherman & Pavlou, 2003; Cruz, 2010; Cheah *et al*. 2011; Thakur & Srivastava, 2014; Vasileiadis, 2014), perceived risk has a significant negative influence on the use behaviour. Perceived risk was found to be a contributing factor in this research with f^2 of 0.013. Hence, e-commerce adopters agreed that they will not use e-commerce when e-commerce posts the risk of security risk, economic risk, functional risk and performance risk.

5.3.2 Objective 2: Relationship between Use of E-commerce and Dependent Variable

The H6 result shows that there is a strong positive association between use of e-commerce and SME performance (β=0.648, t=15.263, p=0.000, VIF=1.000, F-size=0.725). Therefore, H6 was supported and the use of e-commerce significantly influences the SME performance. According to the findings of previous ICT-related study (Zhu & Kraemer, 2002; Zhu, 2004; Al-Dmour & Al-Surkhi, 2012; Azeem *et al*., 2015; Popa & Soto Acosta, 2015; Gregory *et al*., 2017; Macchion *et al*., 2017), the use of e-commerce has a major influence on the SME performance. The use of e-commerce was found to be a significant contributing factor to SME performance in this research with f^2 of 0.725. Hence, e-commerce adopters agreed that their performance will increase with the use of e-commerce. It can help increase their growth in sales revenue, profit, the return of an asset, return on sales, market share, labor productivity, level of customer satisfaction, overall financial performance, level of customer loyalty and growth of machine or worker.

5.3.3 Objective 3: Mediation Effect of Use of E-commerce

As discussed earlier, the researcher concluded that use of e-commerce does mediate the relationship between performance expectancy and SME Performance. H7a was supported (LL= 0.265, UL= 0.429). This demonstrates that e-commerce adopters anticipated the performance expectancy in e-commerce for enhancing the SME performance through the use of e-commerce. Furthermore, the current finding also in the favour of RBV that suggested some performance was enhanced and participated

through the tangible and intangible resources to develop the digital capability towards performance expectancy of using the e-commerce. Finally, the findings support and facilitate SMEs the use of e-commerce, which provide most valuable intangible resources and ingredient for performance expectancy, which would allow SMEs to improve their SME performance.

For H7b, the mediation role of the use of e-commerce between effort expectancy and SME performance was supported (LL=0.015, UL=0.15). Effort expectancy was found to impact on SME performance positively through the mediating role of the use of e-commerce. Based on this finding, effort expectancy will give fruitful results to SMEs to increase their digital capability to perform better and in turn, improve their significant existence in the country GDP. Likewise, the current finding shows that SMEs can have effort expectancy to effortlessly develop ways of using e-commerce platform to enhance the SME performance. The current finding was supported by the RBV, which confirms that SME performance can be increased by having SME resources that make the use of e-commerce effortless.

For H7c, the mediation role of e-commerce use between social influence and SME performance was not supported (LL= -0.065, UL=0.092). There are some explanations that the researcher has considered on why the use of e-commerce is not being a significant mediator in the relationship between social influence and SME performance. The previous literature has shown that the managers/owners behaviour may vary from the marketplace to marketplace, organization to organization and country to country. The behaviour of manager may be substantial in being affected or not affected by the

other parties for increasing the use of e-commerce. The effect of social influence by peers may also vary across generations. The younger generation who has the digital experience in younger age could have adopting e-commerce easier. This was the reason behind the insignificant result of the social influence with use of e-commerce and SME performance.

For H7d, the mediation role of e-commerce use in the relationship between facilitating conditions and SME performance was supported (LL= 0.028, UL= 0.234). Implementing adequate supervisory support or guidance will help SMEs to increase the use of e-commerce that improves the SME performance. This means that the presence of facilitating conditions inspired the employee to participate in the use of e-commerce that improve the SME performance. Hence, the SMEs should establish the environment where facilitating conditions are available for their workers to use e-commerce to increase SME performance. Furthermore, the current finding and results are in favour of RBV, which confirms that SME performance increases with the use of intangible resources, like e-commerce and facilitating conditions.

For H7e, the mediation role of the use of e-commerce between perceived risk and SME performance was supported (LL= -0.096, UL= -0.003). The presence of perceived risk in a monetary transaction discourages SMEs to use e-commerce that affects SME performance. This means that perceived risk affects the perception of SMEs that using e-commerce may bring negative impact to their performance. Hence, marketplace operators shall create awareness that their marketplace has enhanced security features that could encourage SMEs to use e-commerce. Furthermore, the current finding and

results are in favour of RBV, which confirmed that SME performance will be increased by using the intangible resources of the firms, like the use of e-commerce and perceived risk as they could increase digital protection against cybercrime.

5.4 Implication to the Theory

Theoretically, there are several implications of the UTAUT and RBV theories which will be underlined in this research.

5.4.1 Examine the Issue by Combining UTAUT and RBV

The research framework was modified to handle the scope of study that involved the use of e-commerce and SME performance. In the first part, this research has studied the range of factors that influenced the use of e-commerce which are rooted in the UTAUT theory. The second part focuses on the use of e-commerce as a digital capability that influences SME performance and is rooted in the RBV theory. Thus, the use of e-commerce in the research framework is seen as a bridge to link the UTAUT and RBV theories. Moreover, the use of e-commerce was introduced as a mediator to mediate SME performance among the UTAUT's factors. Hence, the research framework adds value to a new exploratory body of knowledge and improve the explanatory power to enhance previous understanding.

5.4.2 Examine the Issue by Taking E-commerce Adopter as Unit of Analysis

Previous studies have mostly focused on the use of e-commerce from the consumerism perspective (Cheah *et al*., 2011; Alkhunaizan & Love, 2012; Ghalandari, 2012; Vasileiadis, 2014; Sohrabi *et al.*, 2013). However, in contrast from the previous

perspective, this research has examined the factor affecting the use of e-commerce by adopter. The group of adopters is considered as this right unit analysis to provide the evaluation of e-commerce about the business performance. In this regard, this advantage of e-commerce adoption is linked to performance. Therefore, it is important for the research to get accurate data from e-commerce adopters on their industry experience of using e-commerce to yield a better result.

5.4.3 Social Influence is Not Significant Factor for E-commerce Adopter

In reviewing the results, it is noticeable that there is no significant relationship between social influence and the use of e-commerce. On the other hand, social influence, a factor from the UTAUT does not contribute encouragement toward use behaviour to accept the e-commerce. In this regard, it can be concluded that this factor does not influenced entrepreneurs to adopt e-commerce which as they are already well-aware of e-commerce. In this regard, the adopters' familiarity of using e-commerce is not influenced by their peers, competitors and suppliers.

5.4.4 Consideration of Perceived Risk in UTAUT Model

This research will add a new dimension to the literature regarding the role of perceived risk in UTAUT when the scope of study is limited to monetary transaction. UTAUT is a popular theory to determine the intention or the use of a technology. It considers four factors, performance expectancy, effort expectancy, social influence and facilitating conditions. UTAUT does not take into the consideration of perceived risk as a factor of the original theory. As monetary transaction existed in an ICT application, the adoption has to consider the perceived risk. Thus, this research will enrich the literature on the perceived risk in the UTAUT and provide an extension to the UTAUT.

5.5 Implication to the Management

After reviewing the findings of this study, there are several important implications suggested for policymakers and e-commerce operators to provide better strategic insight in the design and implementation of e-commerce services to yield a higher SMEs acceptance in Malaysia.

5.5.1 Focus on the Importance of the System Performance and Effort

In this research, both performance expectancy and effort expectancy are significantly related to use of e-commerce. Therefore, e-commerce platform operator could take note on the importance of the values that perceived by SMEs as to the extent of performance and efforts required to use e-commerce. In particular, the perceived of usefulness, ease of use as well as simplicity of the platform need to be introduced. These aspects could be a guideline for future before any technology is introduced for public usage. This means that most SMEs will use this system if they feel that e-commerce as easy to use,

helpful in performing their tasks, simplify their existing workload and less effort is required in their learning and handling of the new system.

5.5.2 Design the System with More Effective Interactions

In terms of effective communication among the sellers, platform operator and buyers, introducing the mobility communication in chat apps may probably increase the interaction among the stakeholders. Through the use of chat apps, information exchange in every day selling and buying activities could be facilitated and confusions could be averted. Hence, bridging the gap between the stakeholders may indirectly help in improving the communication and to clarify the complexity of the selling and buying activities.

5.5.3 Consider the Essential Support of Infrastructure and Technical Facilities

E-commerce operators and government agencies should consider the facilitating conditions and ensure that the resources needed to use e-commerce are available and accessible. Appropriate facilities that support e-commerce such as laptop/computers, server, back up support and other technical equipment should be ready and available in the organization. In fact, employees' acceptance of e-commerce is influenced by the provision of adequate infrastructure and technical support.

5.5.4 Focus on Reducing the Perceived Risk

Since perceived risk greatly influences the use of e-commerce by SMEs, perceived risk is one of the crucial factors that stimulate the level of customers' confidence to adopt the e-commerce. Thus, e-commerce operators should enhance the security features consistently by reviewing the security management during the process of monetary transactions e.g. replacing the currency used in the transaction.

5.5.5 Use of E-commerce Increases SME Performance

The research has presented the evidence on how the use of e-commerce by SMEs could increase their business performance. By using e-commerce, not only that SMEs can do their business in a better way, they might gain advantage of accessing into new market and new supplier at low costs. In promoting e-commerce, governments must recognize that advantage might benefit SMEs by shaping a new form of productivities that leads to further GDP growth. Hence, the government needs to recognize e-commerce as a new economy that increases a country's competitiveness. Moreover, the government should create the right environment and ensure the SMEs can increase their performance through practicing e-commerce.

5.6 Limitation of the Study and Future Research Recommendation

In all, there are several limitations demonstrated in this study. These limitations should be considered for future research improvement. First, the respondents were limited to sellers from Lelong as other platforms e.g. Lazada, 11street and Shopee do not openly publish their seller information. This limitation could be caused by the limitation

imposed by PDPA 2010. Thus, future research may expand the research to other platforms as well.

Second, the empirical evidence for this study was collected within e-commerce platform, and the results may not be generalized and inapplicable to social-commerce (s-commerce). Hence, future researchers may further their research and compare the use of e-commerce, m-commerce and s-commerce. Third, there was no segregation on the type of e-commerce in B2B, B2C and C2C. There is limited research about this segregation in the adoption and performance of different e-commerce sites may vary and the level of the capability was expected to be significantly different. Hence, researchers may further their research on adoption and performance comparison among B2B, B2C and C2C. Fourth, this study was conducted in the Malaysian context and the results may not be applicable to other countries e.g. Singapore. Thus, researchers could expand the study by considering the geographical factor to make a broader generalization in future studies.

5.7 Conclusion

In conclusion, this dissertation aims to investigate the factors influencing the use of e-commerce by Malaysian SMEs. It is posited that adoption will increase SME performance. Indirectly, this research will contribute to the body of knowledge empirically. Here, the existing UTAUT theory was tested by adding perceived risk and expanded together with RBV. The findings of this study show that the use of e-commerce increases the SME performance and the use of e-commerce is influenced by performance expectancy, effort expectancy, facilitating condition and perceived risk.

Meanwhile, the effect of social influence was found to be insignificant in this study. Thus, this research has provided valuable knowledge and information to governments, e-commerce operators, software developers and e-business supply chain to understand more about the use of e-commerce by Malaysian SMEs.

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APPENDIX

Table A1.1

Research questions, research objectives and hypothesis

	Research Questions	Research Objectives	Hypothesis
H1	Does **performance expectancy** have the relationship with the **use of e-commerce**?	To examine the relationships between **performance expectancy** and **use of e-commerce**	**Performance expectancy** has an influence on the **use of e-commerce**
H2	Does **effort expectancy** have the relationship with the **use of e-commerce**?	To examine the relationships between **effort expectancy** and **use of e-commerce**	**Effort expectancy** has an influence on the **use of e-commerce**
H3	Does **social influence** have the relationship with the **use of e-commerce**?	To examine the relationships **social influence** and **use of e-commerce**	**Social influence** has an influence on the **use of e-commerce**
H4	Does **facilitating condition** have the relationship with the **use of e-commerce**?	To examine the relationships between **facilitating condition** and **use of e-commerce**	**Facilitating condition** has an influence on the **use of e-commerce**
H5	Does **perceived risk** have the relationship with the **use of e-commerce**?	To examine the relationships between **perceived risk** and **use of e-commerce**	**Perceived risk** has an influence on the **use of e-commerce**
H6	Does **use of e-commerce** has a relationship with **SME performance**?	To examine the relationships between **use of e-commerce** and **SME performance**	**Use of e-commerce** has an influence on **SME performance**
H7a	Does **use of e-commerce** mediate the relationship between **performance expectancy, effort expectancy, social influence, facilitating condition** and **perceived risk** on **SME performance**?	To examine the **use of e-commerce** mediation on the relationship between **performance expectancy, effort expectancy, social influence, facilitating condition** and **perceived risk** on **SME performance**	The relationship between **performance expectation** and **SME performance** is mediated by the **use of e-commerce**
H7b			The relationship between **effort expectation** and **SME performance** is mediated by the **use of e-commerce**
H7c			The relationship between **social influence** and **SME performance** is mediated by the **use of e-commerce**
H7d			The relationship between **facilitating condition** and **SME performance** is mediated by the **use of e-commerce**
H7e			The relationship between **perceived risk** and **SME performance** is mediated by the **use of e-commerce**

Table A1.2
Estimated Item Listing Number in Lelong.my on 7th January 2017

	Categories	Estimated Listing
1	Phone & Tablet	116,820
2	Electronics & Appliances	72,300
3	Fashion	129,420
4	Beauty & Personal Cares	45,540
5	Watches & Clocks	36,900
6	Home & Gardening	71,880
7	Sports & Recreation	32,220
8	Books & Comics	47,520
9	Computer & Software	161,040
10	Camera & Camcorder	31,080
11	Jewelry & Accessories	18,060
12	Baby, Kids, Mum	22,860
13	Cars & Transport	74,100
14	Food & Beverages	5,220
15	Pet Supplies	9,960

Table A1.3
Definition of Key Terms

Key Term	Definition	Source
Behavioral Intention (BI)	A person's perceived likelihood or subjective probability that he or she will engage in a given behavior	Venkatesh *et al.*, 2003
Business performance	The reflection of the perspective of strategic management effectiveness, is a subset of the overall concept of organizational effectiveness	Venkatraman & Ramanujam, 1986
Business-to-Business (B2B)	The activities when business entities or organizations participate with other businesses or organizations to do e-commerce	Turban *et al.*, 2008
Business-to-Consumers (B2C)	The activities when a business or organization entity provides products or services to individual customers	Turban *et al.*, 2008
Consumer-to-Business (C2B)	A type of e-commerce in which individuals use the Internet to sell products or services to organizations, as well as, individuals who seek sellers to bid on products or services they need	Turban *et al.*, 2008

Economical Risk (ER)	Perceived economic risk arises from the perception of possible economic loss due to transaction error or faulty operation.	Koenig-Lewis *et al.* 2010
Effort Expectation (EE)	The degree of ease associated with the use of the system.	Venkatesh *et al.*, 2003
Electronic Commerce (EC)	The monetary process of buying, selling, transferring, or exchanging products, services, and/or information based on the following prevailing conditions	Turban *et al.*, 2008
Facilitating Conditions (FC)	The degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system.	Venkatesh *et al.*, 2003
Functional Risk (FR)	The perceived functional risk lies in the perception of possible lack of service reliability or accessibility	Wessels & Drennan, 2010
Location-based Commerce (L-commerce)	A type of m-commerce transactions targeted to individuals in specific locations, at specific times are known as location-based commerce	Turban *et al.*, 2008
Mobile Commerce (M-commerce)	A type of e-commerce transactions and activities conducted in full or in part in a wireless environment	Turban *et al.*, 2008
Perceived risk (PR)	A perception refers to an individual's subjective expectation of potential issues while conducting monetary transactions over mobile IT services. PR is "the perception of uncertainty and adverse consequences resulting from a given activity	Forsythe *et al.*, 2006
Performance Expectation (PE)	The degree to which an individual believes that using the system will help him or her to attain gains in job performance	Venkatesh *et al.*, 2003
Security Risk (SR)	The perceived security risk of mobile financial services lies in the perception of potential harm due to electronic fraud or hacker attacks	Mallat, 2007; Mallat *et al.*, 2006
SME Performance (SP)	A critical factor for effective management to which an operation fulfills the performance and meet the needs of the customers	Salaheldin, 2009; Slack *et al.*, 2001

Social Influence (SI)	The degree to which an individual perceives that important others believe he or she should use the new system.	Venkatesh *et al.*, 2003
Social network websites	A type of websites that allow visitors to register and connect to other registered members in order to communicate or share resources	Thelwall, 2008
Unified theory of acceptance and use of technology (UTAUT)	A consolidated model extensively used to explain an individual's acceptance and use of a technology	Venkatesh *et al.*, 2003
Use behavior (UB) or attitude towards using technology (ATUT).	An individual's liking, enjoyment, joy, and pleasure associated with technology use	Venkatesh *et al.*, 2003

Table A3.1

Operationalized Construct: Performance Expectancy

OPERATIONALIZATION OF VARIBLES			
a.	**Construct Name**	Performance Expectancy (PE)	
b.	**Operational Definition**	The degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh *et al.*, 2003).	
c.	**Objective**	To measure the extent which SME believes that utilizing the e-commerce will help to attain gains in SME task performance.	
d.	**Variable Type**	Independent Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.91-0.92	
Item	**Original Construct/Item**	**Adapted Item**	**Sources**
PE1	**Perceived Usefulness:** Using the system would enhance my effectiveness on the job.	Using the ***e-commerce*** would enhance my ***business*** effectiveness.	Davis 1989; Davis *et al.*, 1989; Venkatesh *et al.*, 2003
PE2	**Perceived Usefulness:** I would find the system useful in my job.	***My Company*** would find that ***e-commerce is*** useful in my ***business***.	Davis, 1989; Davis *et al.*, 1989; Venkatesh *et al.*, 2003
PE3	**Relative Advantage:** Using the system increases my productivity.	Using the ***e-commerce*** increases my ***business*** productivity.	Moore & Benbasat, 1991; Venkatesh *et al.*, 2003
PE4	**Relative Advantage:** Using the system enables me to accomplish tasks more quickly.	Using the ***e-commerce*** enables ***my staff*** to accomplish ***transactions*** more quickly.	Moore & Benbasat, 1991; Venkatesh *et al.*, 2003
PE5	**Job-it:** Use of the system can decrease the time needed for my important job responsibilities.	Use of the ***e-commerce*** can decrease the time needed for my ***business transaction***.	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003
PE6	**Outcome Expectation:** If I use the system... 3. I will increase the quality of output of my job.	If ***my company*** uses the ***e-commerce***, ***it*** will increase the quality of sales of my ***business***.	Compeau & Higgins, 1995; Venkatesh *et al.*, 2003

Table A3.2

Operationalized Construct: Effort Expectancy

OPERATIONALIZATION OF VARIBLES			
a.	**Construct Name**	**Effort Expectancy (EE)**	
b.	**Operational Definition**	The degree of ease associated with the use of the system (Venkatesh *et al.*, 2003).	
c.	**Objective**	To measure the extent which SME believes that learning to use the e-commerce will not require significant effort.	
d.	**Variable Type**	Independent Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.90-0.94	
Item	**Original Construct/Item**	**Adapted Item**	**Sources**
EE1	**Perceived Ease of Use:** Learning to operate the system would be easy for me.	Learning to ***use*** the ***e-commerce*** would be easy for ***my staff***.	Davis 1989; Davis *et al.*, 1989; Venkatesh *et al.*, 2003
EE2	**Perceived Ease of Use:** My interaction with the system would be clear and understandable.	My ***staff*** interaction with the ***e-commerce*** would be clear and understandable.	Davis 1989; Davis *et al.*, 1989; Venkatesh *et al.*, 2003
EE3	**Perceived Ease of Use:** It would be easy for me to become skillful at using the system.	It would be easy for my ***staff*** to become skillful at using ***e-commerce***.	Davis 1989; Davis *et al.*, 1989; Venkatesh *et al.*, 2003
EE4	**Perceived Ease of Use:** I would find the system easy to use.	***My staff*** would find ***e-commerce*** easy to use.	Davis 1989; Davis *et al.*, 1989; Venkatesh *et al.*, 2003
EE5	**Complexity:** Using the system involves too much time doing mechanical operations (for example, data input)	Using the ***e-commerce*** involves less time doing ***business transaction***. [Reverse order from original item]	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003
EE6	**Complexity of the Service:** This service is complicated in nature.	The e-commerce is simple in nature. [Reverse order from original item]	Burnham *et al.*, 2003

Table A3.3

Operationalized Construct: Social Influence

OPERATIONALIZATION OF VARIBLES			
a.	**Construct Name**	Social Influence (SI)	
b.	**Operational Definition**	The degree to which an individual perceives that important others believe he or she should use the new system (Venkatesh *et al.*, 2003).	
c.	**Objective**	To measure the extent which SME perceives that their peers directly or indirectly influence them to use e-commerce in their business.	
d.	**Variable Type**	Independent Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.88-0.94	
Item	**Original Construct/Item**	**Adapted Item**	**Sources**
SI1	**Social Influence:** I feel people around me would encourage me to use mobile stock trading.	I feel people around me would encourage ***my company*** to use ***e-commerce***.	Tai & Ku, 2013
SI2	**Subjective Norm:** People who are important to me think that I should use the system.	People who are important to the ***company*** would think that ***my company*** should use ***e-commerce***.	Ajzen, 1991; Venkatesh *et al.*, 2003
SI3	**Image:** People in my organization who use the system have more prestige than those who do not.	***A company*** which uses the ***e-commerce*** has more prestige than those who do not.	Moore & Benbassat, 1991; Venkatesh *et al.*, 2003
SI4	**Attitude Toward Word-of-Mouth (Online):** I like to learn about others' product and service experiences.	***My company*** likes to learn about others' using ***the e-commerce*** experience (from blog, review, comment, business magazine etc.).	Khare *et al.*, 2011
SI5	**Attitude Toward the Website (Image):** People in my personal environment who use this website have a high profile.	***A company*** which uses the ***e-commerce*** has a high profile.	Moore & Benbassat, 1991; Venkatesh & Davis, 2000
SI6	**Social Factor:** I use the system because of the proportion of coworkers who use the system.	***My company*** uses the ***e-commerce*** because of my ***peers for example business partners/competitors also using the e-commerce***.	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003

Table A3.4

Operationalized Construct: Facilitating Conditions

OPERATIONALIZATION OF VARIBLES			
a.	Construct Name	Facilitating Conditions (FC)	
b.	**Operational Definition**	The degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh *et al.*, 2003)	
c.	**Objective**	To measure the extent which SME perceives that the existing external or internal organizational and technical infrastructure to support them to use e-commerce.	
d.	**Variable Type**	Independent Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.83-0.87	
Item	**Original Construct/Item**	**Adapted Item**	**Sources**
FC1	**Perceived Behavioral Control:** I have the resources necessary to use the system.	***My company*** has the resources necessary to use the ***e-commerce*** for example man power, capital, etc.	Ajzen, 1991; Taylor & Todd 1995a, 1995b; Venkatesh *et al.*, 2003
FC2	**Perceived Behavioral Control:** Given the resources, opportunities and knowledge it takes to use the system, it would be easy for me to use the system.	Given the government resources (for example SME Corp, training, subsidies, etc.), opportunities and knowledge it takes to use the system, it would be easy for ***my company*** to use the ***e-commerce***.	Ajzen, 1991; Taylor & Todd 1995a, 1995b; Venkatesh *et al.*, 2003
FC3	**Facilitating Conditions:** Guidance was available to me in the selection of the system	Guidance was available to ***my company*** in the selection of the ***e-commerce platforms*** for example Lazada's webinar.	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003
FC4	**Facilitating Conditions:** A specific person (or group) is available for assistance with system difficulties.	A specific ***instructor*** is available for assistance with system difficulties for example Lazada's technician to help about product listing, Shopee university etc.	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003
FC5	**Compatibility:** Using the system fits into my work style.	Using the ***e-commerce*** fits into ***our way of doing business***.	Moore & Benbasat, 1991; Venkatesh *et al.*, 2003
FC6	**Compatibility:** Using the system is compatible with all aspects of my work.	Using the ***e-commerce*** is compatible with all aspects of ***my business transaction***.	Moore & Benbasat, 1991; Venkatesh *et al.*, 2003

Table A3.5

Operationalized Construct: Perceived Risk

OPERATIONALIZATION OF VARIBLES			
a.	**Construct Name**	Perceived Risk (PR)	
b.	**Operational Definition**	A perception refers to an individual's subjective expectation of potential issues while conducting monetary transactions over ICT services. PR is the perception of uncertainty and adverse consequences resulting from a given activity (Forsythe *et al.*, 2006)	
c.	**Objective**	To measure the extent which SME perceives that the uncertainty and adverse consequences resulting from using the e-commerce in their business.	
d.	**Variable Type**	Independent Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.78-0.91	
Item	**Original Construct/Item**	**Adapted Item**	**Sources**
PR1	**Security Risk:** I am worried that others might be able to access my mobile stock trading account.	***My company*** is worried that others might be able to access ***my company e-commerce*** account.	Tai & Ku, 2013
PR2	**Security Risk:** I would not feel totally safe providing personal information over mobile stock trading systems.	***My company*** would not feel totally safe providing ***business information*** to ***e-commerce marketplace operators*** (for example Lazada, 11street, Lelong etc.)	Tai & Ku, 2013
PR3	**Economic Risk:** I am uneasy about using mobile stock trading because I may lose money due to incorrect operation, a careless mistake and system processing errors.	***My company*** is uneasy about ***using e-commerce*** because the company may lose money due to incorrect operation, a careless mistake and system processing errors.	Tai & Ku, 2013
PR4	**Product Failure Severity:** The problem caused great financial loss to me.	***When a marketplace shutdown*** (for example Rakuten SEA), that problem caused great financial loss to ***my company***.	Homburg *et al.*, 2010
PR5	**Functional Risk:** I am concerned that mobile stock trading services cannot meet my needs due to poor functionality or system malfunctions.	***My company*** concerns that ***e-commerce*** cannot meet my company needs due to poor functionality or system malfunctions.	Tai & Ku, 2013
PR6	**Performance Risk:** The likelihood of _____ performing as expected is significantly lower than the likelihood of standard _____ performing as expected.	The likelihood of ***e-commerce*** performance is expected significantly lower than the likelihood of ***my real retail business*** performing as expected.	Gürhan-Canli and Batra, 2004

Table A3.6

Operationalized Construct: use of e-commerce

OPERATIONALIZATION OF VARIBLES			
a.	**Construct Name**	Use of e-commerce (UE)	
b.	**Operational Definition**	An individual's liking, enjoyment, joy, and pleasure associated with technology use (Venkatesh *et al.*, 2003)	
c.	**Objective**	To measure the extent which SME perceives that using the e-commerce in their business.	
d.	**Variable Type**	Mediating Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.77-0.84	
Item	**Original Construct/Item**	**Adapted Item**	**Sources**
UE1	**Attitude toward Behavior:** Using the system is a bad/good idea.	Using the ***e-commerce*** is a good idea.	Davis *et al.*, 1989; Fishbein and Ajzen, 1980; Taylor and Todd 1995a, 1995b; Venkatesh *et al.*, 2003
UE2	**Intrinsic Motivation:** I find using the system to be enjoyable	***My company*** finds using the ***e-commerce*** to be enjoyable.	Davis *et al.*, 1992; Venkatesh *et al.*, 2003
UE3	**Intrinsic Motivation:** I have fun using the system.	***My company*** has fun using the ***e-commerce***.	Davis *et al.*, 1992; Venkatesh *et al.*, 2003
UE4	**Affect toward Use:** The system makes work more interesting.	The ***e-commerce*** makes ***business*** more interesting.	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003
UE5	**Affect toward Use:** Working with the system is fun.	***Doing business*** with ***e-commerce*** is fun.	Thompson *et al.*, 1991; Venkatesh *et al.*, 2003
UE6	**Affect:** I like working with the system.	I like ***doing business*** with the ***e-commerce***.	Compeau and Higgins, 1995b; Compeau *et al.*, 1999; Venkatesh *et al.*, 2003

Table A3.7

Operationalized construct: SME Performance

OPERATIONALIZATION OF VARIBLES			
a.	**Construct Name**	SME Performance (SP)	
b.	**Operational Definition**	SME Performance is a critical factor for effective management (Salaheldin, 2009) to which an operation fulfills the performance and meet the needs of the customers (Slack *et al.*, 2001)	
c.	**Objective**	To measure performance scope of growth in sales revenue, profitability, returns on assets, returns on sales, market share, labor productivity, level of customer satisfaction, overall financial performance, level of customer loyalty and growth of worker (machine).	
d.	**Variable Type**	Dependent Variable	
e.	**Measurement**	Interval, Likert Scale (1 = strongly disagree to 7 = strongly agree)	
f.	**Type of Analysis**	Descriptive statistics	
g.	**Cronbach Alpha**	0.9	
Item	**Original Construct/Item**	**Adapter/adopted Item**	**Sources**
SP1	The company has increased on growth in sales revenue	The company has increased on growth in sales revenue	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP2	The company has increased on profitability	The company has increased on profitability	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP3	The company has increased on return on asset	The company has increased on return on asset	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP4	The company has increased on return on sales	The company has increased on return on sales	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP5	The company has increased in market share	The company has increased in market share	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP6	The company has increased on labor productivity	The company has increased on labor productivity	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP7	The company has increased on level of customer satisfaction	The company has increased on level of customer satisfaction	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP8	The company has increased on overall financial performance	The company has increased on overall financial performance	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP9	The company has increased on level of customer loyalty	The company has increased on level of customer loyalty	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014
SP10	The company has increased in growth of the machine	The company has increased in growth of machine **or worker**	Mohd Rosli *et al.*, 2012; Shamsuddin, 2014

Form A3.8 Questionnaire

UNDERSTANDING SME PERFORMANCE AND THE USE OF E-COMMERCE BY MALAYSIAN SME/MEMAHAMI PRESTASI SME DAN PENGGUNAAN E-DAGANG OLEH SME MALAYSIA/中小企业绩效和马来西亚中小企业使用的电子商务

I am doing my Universiti Utara Malaysia doctoral research about the use of e-commerce by Malaysian SME. The research topic is about the use of e-commerce that might improve your company performance. I have prepared the academic questionnaire which you might take 10 minutes to fill up the scale. No explicit personal information will be taken. It is purely for the academic purposes. Thank you very much.

Saya menjalankan penyelidikan doktoral di Universiti Utara Malaysia mengenai penggunaan e-dagang oleh SME Malaysia. Topik penyelidikan adalah mengenai penggunaan e-dagang yang mungkin meningkatkan prestasi syarikat anda. Saya telah menyediakan soal selidik akademik yang anda mungkin mengambil masa 10 minit untuk mengisi skala. Tiada maklumat peribadi yang jelas akan diambil. Ia semata-mata untuk tujuan akademik. Terima kasih banyak - banyak.

我正在做我的马来西亚北方大学博士研究。研究课题是关于马来西亚中小企业对电子商务的使用，这可能会提高您的公司业绩。 我准备了学术问卷，你可能需要10分钟才能完成填写这个研究。没有明确的个人信息将被采取。 它纯粹是为了学术目的。 致谢。

Chin Hon Keong (Matrix No. 95923)

* Required

1. Email address *

Demographic

1. What is your position held in your organization? Apakah Jawatan anda dalam organisasi anda? 您在组织中的职位是什么？ *
Mark only one oval.

- ◯ Owner. Pemilik. 业主.
- ◯ Manager. Pengurus. 经理.
- ◯ Others. Lain-lain. 其他.

2. Gender. Jantina. 性别. *
Mark only one oval.

- ◯ Male. Lelaki. 男.
- ◯ Female. Perempuan. 女.

3. Age (in years). Umur (dalam tahun). 年龄
*

4. Does your organization has experience of selling items or services online? Adakah organisasi anda mempunyai pengalaman menjual barangan atau perkhidmatan dalam online? 您的组织是否有在线销售商品或服务的经验？ *
Mark only one oval.

- ◯ Yes
- ◯ No

5. Which online marketplace do you currently use? Apakah Online Marketplace anda guna sekarang? 你目前使用哪个在线市场？ *
Check all that apply.

- ☐ Facebook
- ☐ Own Website with payment gateway e.g. M2U pay, ipay88, MOL, Netpay
- ☐ Own Website without payment gateway e.g. direct bank-in, interbank transfer
- ☐ Lazada online market place
- ☐ Lelong online market place
- ☐ 11street online market place
- ☐ Qoo10 online market place
- ☐ Gemfive online market place
- ☐ Ensogo online market place
- ☐ Groupon
- ☐ Carousel, Duriana, Shopee, imSold! online mobile market place
- ☐ Mudah
- ☐ Other: _____

6. Which area where you target to sell to? Kawasan manakah yang anda sasarkan untuk menjual? 您要销售到哪个区域？ *
Check all that apply.

- ☐ West Malaysia
- ☐ East Malaysia
- ☐ South East Asia
- ☐ International

7. Online selling experience. Pengalaman jualan dalam internet. 在线销售经验 * *Mark only one oval.*

- ◯ less than a year
- ◯ a year to three years
- ◯ three to five years
- ◯ five years and above

8. Do you have a valid SSM registration? Adakah anda mempunyai pendaftaran SSM yang sah? 您是否拥有有效的马来西亚公司注册局(SSM)的注册？ *
Mark only one oval.

- ◯ Yes
- ◯ No

9. Do you have a physical stall and/or shop? Adakah anda mempunyai kedai dan/atau gerai? 你有摊位和/或商店吗？ *
Mark only one oval.

- ◯ Yes
- ◯ No

10. What is the core products that you are selling? Apakah produk teras yang anda jual? 你销售的核心产品是什么？ *
Mark only one oval.

- ◯ Baby and Kid
- ◯ Fashion
- ◯ Home and Living
- ◯ Mobile Gadget and Computer
- ◯ Outdoor and Sport
- ◯ Office and Stationery
- ◯ Travel and Ticket
- ◯ Voucher, Coupon and Top-up
- ◯ Other:

11. How many listing in your webstore? Berapa banyak penyenaraian di webstore anda? 你的网上商店有多少样物品上市？ *
Mark only one oval.

- ◯ Less than 20 items
- ◯ Between 21 to 50 items
- ◯ Between 51 to 100 items
- ◯ Between 101 to 500 items
- ◯ Between 501 to 1000 items
- ◯ Between 1001 to 2500 items
- ◯ More than 2501 items

12. Are you a GST registered seller? Adakah anda penjual GST berdaftar?你是GST注册卖家吗？ *
Mark only one oval.

- ◯ Yes
- ◯ No

13. What is your company average online sales per month? Apakah purata jualan dalam talian syarikat anda sebulan? 您的公司每月平均网路销售是多少？ *
Mark only one oval.

- ◯ Below RM500
- ◯ Between RM501 to RM1000
- ◯ Between RM1001 to RM5000
- ◯ Between RM5001 to RM10000
- ◯ Over RM10000

14. How many workers in your company? Berapa ramai pekerja di syarikat anda? 贵公司有多少名员工？ *
Mark only one oval.

- Below 5 workers
- Between 6 to 30 workers
- Between 31 to 75 workers
- Over 75 workers

15. Do you accept dropshipper? Adakah anda menerima dropshipper? 你接受的dropshipper? *
Mark only one oval.

- Yes
- No

Research Questionnaire

Instructions: Please take a few minutes to tell us what you think about the using the e-commerce in selling your products and services. There are no right or wrong responses; we are merely interested in your personal opinions in the academic study about use of e-commerce to boost your company sales (1: Strongly Disagree, 2: Disagree, 3: Somewhat Disagree, 4: Neutral, 5: Somewhat Agree, 6: Agree and 7: Strongly Agree).

Arahan: Sila ambil beberapa minit untuk memberitahu kami tentang apa yang anda fikirkan tentang penggunaan e-dagang dalam menjual produk dan perkhidmatan anda. Tidak ada tindak balas yang betul atau salah; Kami hanya tertarik dengan pendapat peribadi anda dalam kajian akademik mengenai penggunaan e-dagang untuk meningkatkan jualan syarikat anda (1: Sangat Tidak Setuju, 2: Tidak Setuju, 3: Tidak Setuju, 4: Neutral, 5: Agree Setuju, 6: Setuju Dan 7: Sangat Setuju).

说明，请花几分钟时间告诉我们您在销售产品和服务时使用电子商务的想法。
没有正确或错误的答复;我们仅仅关注使用电子商务促进公司销售的学术研究中的个人观点（1：强烈不同意，2：不同意，3：有点不同意，4：中立，5：有点同意，6：同意 和7：非常同意）。

PE1: Using the e-commerce would enhance my business effectiveness. Menggunakan e-dagang akan meningkatkan keberkesanan perniagaan saya. 使用电子商务将提高我的业务效率 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

PE2: My Company would find that e-commerce is useful in my business. Syarikat saya akan mendapati bahawa e-dagang berguna dalam perniagaan saya.
我的公司会发现电子商务在我的业务中是有用的 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

PE3: Using the e-commerce increases my business productivity. Menggunakan e-dagang meningkatkan produktiviti perniagaan saya. 使用电子商务增加了我的业务生产力 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

PE4: Using the e-commerce enables my staff to accomplish transactions morequickly. Dengan menggunakan e-dagang, kakitangan saya dapat melakukan transaksi lebih cepat. 使用电子商务可以让我的员工更加完成交易 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

PE5: Use of the e-commerce can decrease the time needed for my businesstransaction. Penggunaan e-dagang dapat mengurangkan masa yang diperlukan untuk transaksi perniagaan saya. 使用电子商务可以减少我的业务交易所需的时间 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

PE6: If my company uses the e-commerce, it will increase the quality of sales of my business. Jika syarikat saya menggunakan e-dagang, ia akan meningkatkan kualiti jualan perniagaan saya. 如果我公司使用电子商务，这将提高我的业务销售质量 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

EE1: Learning to use the e-commerce would be easy for my staff. Belajar menggunakan e-dagang adalah mudah untuk kakitangan saya. 学习使用电子商务对我的员工来说是容易的 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

EE2: My staff interaction with the e-commerce would be clear and understandable. Interaksi kakitangan saya dengan e-dagang adalah jelas dan mudah difahami. 我的员工与电子商务的互动是明确和可理解的 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

EE3: It would be easy for my staff to become skillful at using e-commerce. Adalah mudah bagi kakitangan saya untuk menjadi mahir dalam menggunakan e-dagang. 我的员工很容易熟练使用电子商务 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

EE4: My staff would find e-commerce easy to use. Kakitangan saya mendapati e-dagang mudah digunakan. 我的工作人员会发现电子商务易于使用 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

EE5: Using the e-commerce involves less time doing business transaction. Menggunakan e-dagang melibatkan masa yang kurang melakukan transaksi perniagaan. 使用电子商务涉及较少的时间进行商业交易 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

EE6: The e-commerce is simple in nature. E-dagang sememangnya mudah. 电子商务本质上很简单 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SI1: I feel people around me would encourage my company to use e-commerce. Saya rasa orang di sekeliling saya akan menggalakkan syarikat saya menggunakan e-dagang. 我觉得周围的人会鼓励我的公司使用电子商务 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SI2: People who are important to the company would think that my company should use e-commerce. Orang yang penting kepada syarikat saya berfikir bahawa syarikat saya harus menggunakan e-dagang. 对公司重要的人会认为我公司应该使用电子商务 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SI3: A company which uses the e-commerce has more prestige than those who do not. Sebuah syarikat yang menggunakan e-dagang mempunyai lebih berprestise daripada mereka yang tidak. 使用电子商务的公司比没有电子商务的公司更有声望 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SI4: My company likes to learn about others' using the e-commerce experience (from blog, review, comment, business magazine etc.). Syarikat saya suka belajar tentang pengalaman orang lain yang menggunakan e-dagang (dari blog, ulasan, majalah perniagaan dan sebagainya). 我公司喜欢了解别人使用电子商务的经验(从博客, 评论, 商业杂志等) *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SI5: A company which uses the e-commerce has a high profile. Sebuah syarikat yang menggunakan e-dagang mempunyai profil yang tinggi. 使用电子商务的公司有很高的知名度 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SI6: My company uses the e-commerce because of my peers e.g. business partners/competitors also using the e-commerce. Syarikat saya menggunakan e-dagang kerana rakan-rakan saya misalnya, rakan kongsi/pesaing perniagaan juga menggunakan e-dagang. 我的公司使用电子商务是因为我的同行, 例如 商业伙伴/竞争对手也使用电子商务 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FC1: My company has the resources necessary to use the e-commerce e.g. manpower, capital, etc. Syarikat saya mempunyai sumber yang diperlukan untuk menggunakan e-dagang misalnya tenaga kerja, modal dan sebagainya. 我公司拥有使用电子商务所需的资源, 例如 人力, 资金等 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FC2: Given the government resources (e.g. SMECorp, training, subsidies, etc.), opportunities and knowledge it takes to use the system, it would be easy for my company to use the e-commerce. Memandangkan sumber kerajaan (cth. SMECorp, latihan, subsidi, dll.), peluang dan pengetahuan yang diperlukan untuk menggunakan sistem, akan mudah bagi syarikat saya untuk menggunakan e-dagang. 基于政府资源(如SMECorp, 培训, 补贴等), 使用系统所需的机会和知识, 我公司很容易使用电子商务 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FC3: Guidance was available to my company in the e-commerce platforms e.g. Lazada's webinar. Panduan disediakan untuk syarikat saya dalam platform e-dagang misalnya Webinar Lazada. 我公司的电子商务平台中提供了使用指导, 例如 Lazada的网络研讨会 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FC4: A specific instructor is available for assistance with system difficulties e.g. Lazada's technician to help about product listing, Shopee university etc. Pengajar khusus boleh didapati untuk bantuan dengan masalah sistem, contohnya Juruteknik Lazada untuk membantu penyenaraian produk, universiti Shopee dll.
具体的教练可以帮助克服系统的困难, 例如Lazada的技术人员帮助产品上市, Shopee大学等 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FC5: Using the e-commerce fits into our way of doing business. Menggunakan e-dagang sesuai dengan cara kami menjalankan perniagaan. 使用电子商务符合我们的经营方式 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FC6: Using the e-commerce is compatible with all aspects of my businesstransaction. Menggunakan e-dagang ini bersesuaian dengan semua aspek transaksi perniagaan saya.
使用电子商务兼容我的业务交易的所有方面 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SR1: My company is worried that others might be able to access my company e-commerce account. Syarikat saya bimbang orang lain mungkin dapat mengakses akaun e-dagang syarikat saya. 我公司担心其他人可能能够访问我公司的电子商务账户 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SR2: My company would not feel totally safe providing business information to e-commerce marketplace operators (e.g. Lazada, 11street, Lelong etc.). Syarikat saya tidak akan merasa benar-benar selamat memberikan maklumat perniagaan kepada pengendali pasaran e-dagang (cth. Lazada, 11street, Lelong dll).
我的公司会觉得不安全把公司的业务信息提供给电子商务市场运营商(如Lazada, 11street, Lelong等) * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

ER1: My company is uneasy about using e-commerce because my company may lose money due to incorrect operation, a careless mistake and system processing errors. Syarikat saya tidak selesa menggunakan e-dagang kerana syarikat mungkin kehilangan wang kerana operasi yang salah, kesilapan yang tidak bijak dan kesalahan pemprosesan system. 我公司对使用电子商务感到不安, 因为公司可能由于操作不正确, 粗心大意的错误和系统处理错误而造成损失 *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

ER2: When a e-marketplace shutdown (e.g. Rakuten SEA), that problem caused great financial loss to my company. Apabila penutupan e-pasaran (misalnya Rakuten SEA), masalah itu menyebabkan kerugian kewangan yang besar kepada syarikat saya. 当电子市场关闭(例Rakuten SEA)时, 这个问题会带给我的公司巨大的经济损失 *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FR1: My company concerns that e-commerce cannot meet my company needs due to poor functionality or system malfunctions. Syarikat saya bimbang bahawa e-dagang tidak dapat memenuhi keperluan syarikat saya disebabkan oleh fungsi atau kesilapan sistem yang tidak baik. 我的公司担心电子商务功能差或系统故障而无法满足我的公司需求 *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

FR2: The likelihood of e-commerce performance is expected significantly lower than the likelihood of my real retail business performing as expected. Kemungkinan prestasi e-dagang dijangka jauh lebih rendah berbanding daripada kemungkinan menjalankan perniagaan runcit. 预期电子商务业绩的可能大大低于我的零售业务预期的业绩 *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

UE1: Using the e-commerce is a good idea. Menggunakan e-dagang adalah idea yang baik. 使用电子商务是一个好主意 *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

UE2: My company finds using the e-commerce to be enjoyable. Syarikat saya mendapati menggunakan e-dagang adalah menyeronokkan. 我公司使用电子商务是愉快的 *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

UE3: My company has fun using the e-commerce. Syarikat saya berseronok menggunakan e-dagang. 我公司使用电子商务是很有趣 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

UE4: The e-commerce makes business more interesting. E-dagang menjadikan perniagaan lebih menarik. 电子商务使业务更有趣 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

UE5: Doing business with e-commerce is fun. Menjalankan perniagaan dengan e-dagang adalah menyeronokkan. 使用电子商务做生意很有趣 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

UE6: I like doing business with the e-commerce. Saya suka melakukan perniagaan dengan e-dagang. 我喜欢使用电子商务做生意 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP1: The company has increased on growth in sales revenue. Syarikat telah meningkatkan pertumbuhan pendapatan jualan. 公司的销售收入增长有所增加 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP2: The company has increased on profitability. Syarikat telah meningkatkan keuntungan. 公司盈利能力有所提高 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP3: The company has increased on return on asset. Syarikat telah meningkat pulangan asset (ROA). 公司资产回报率有所上升 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP4: The company has increased on return on sales. Syarikat itu telah meningkatkan pulangan jualan. 公司的销售回报率有所增加 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP5: The company has increased in market share. Syarikat itu telah meningkat dalam bahagian pasaran (market share). 公司的市场份额有所增加 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP6: The company has increased on labor productivity. Syarikat telah meningkatkan produktiviti buruh. 公司劳动生产率有所上升 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP7: The company has increased on level of customer satisfaction. Syarikat telah meningkatkan tahap kepuasan pelanggan. 公司客户满意度有所提高了 *
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP8: The company has increased on overall financial performance. Syarikat telah meningkatkan prestasi kewangan secara keseluruhan. 公司整体财务业绩有所增加 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP9: The company has increased on level of customer loyalty. Syarikat telah meningkatkan tahap kesetiaan pelanggan. 公司的客户忠诚度水平有所提高 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

SP10: The company has increased in growth of machine or worker. Syarikat itu telah meningkat dalam pertumbuhan mesin atau pekerja. 公司的机器或工人的增长率有所增加 * *Mark only one oval.*

	1	2	3	4	5	6	7	
Strongly Disagree	◯	◯	◯	◯	◯	◯	◯	Strongly Agree

Feedback

Your feedback is extremely valuable to this research. Please comment if you think you have words for the e-commerce practice. Thank you. Maklum balas anda amat berharga untuk penyelidikan ini. Sila komen jika anda fikir anda mempunyai kata-kata untuk amalan e-dagang. Terima kasih. 您的反馈对本研究非常有价值 如果您认为您有电子商务实践的话, 请评论 谢谢

Appreciation

Your response has been recorded. Thank you very much.

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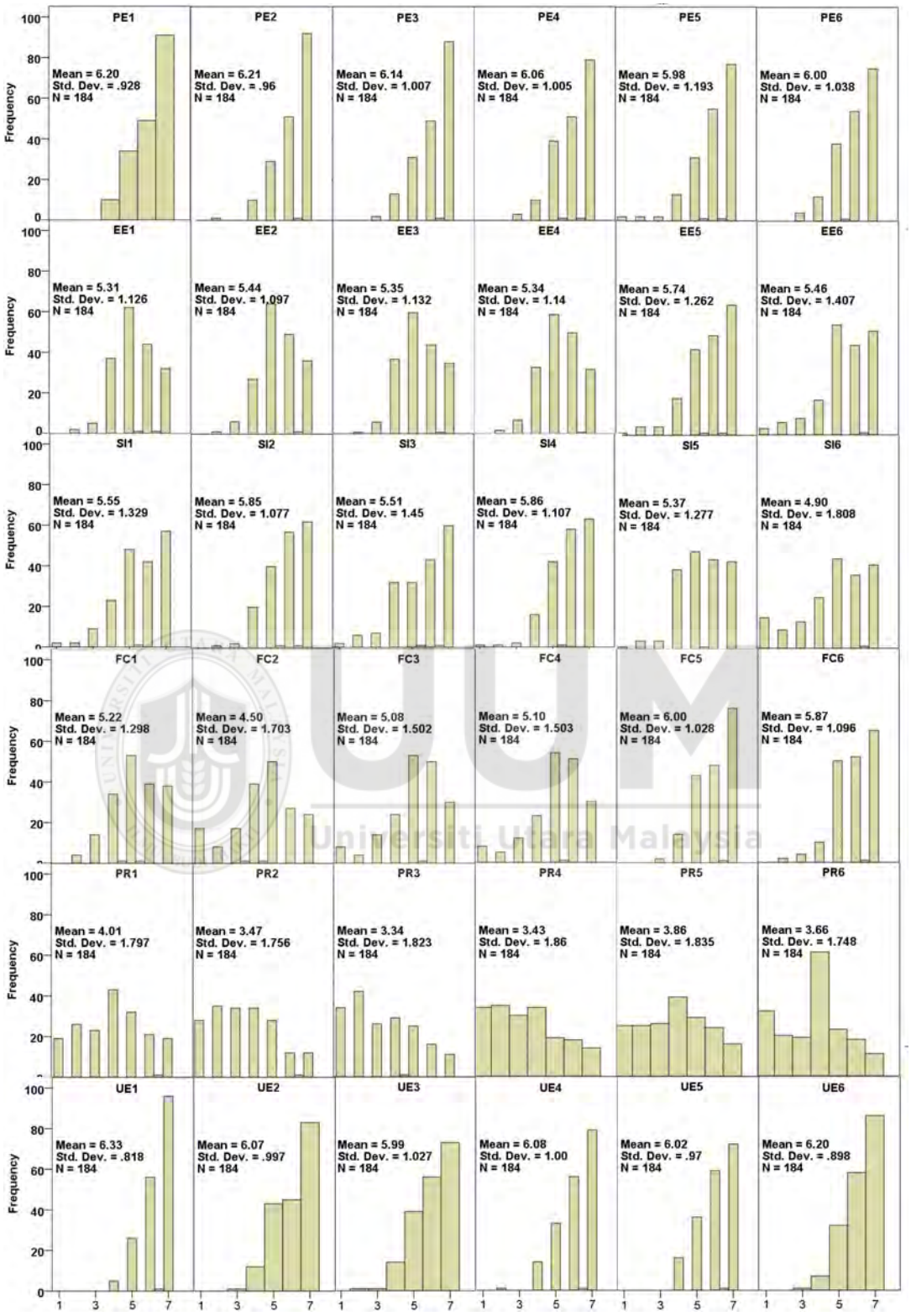

Figure A4.1
Descriptive Analysis for Indicators

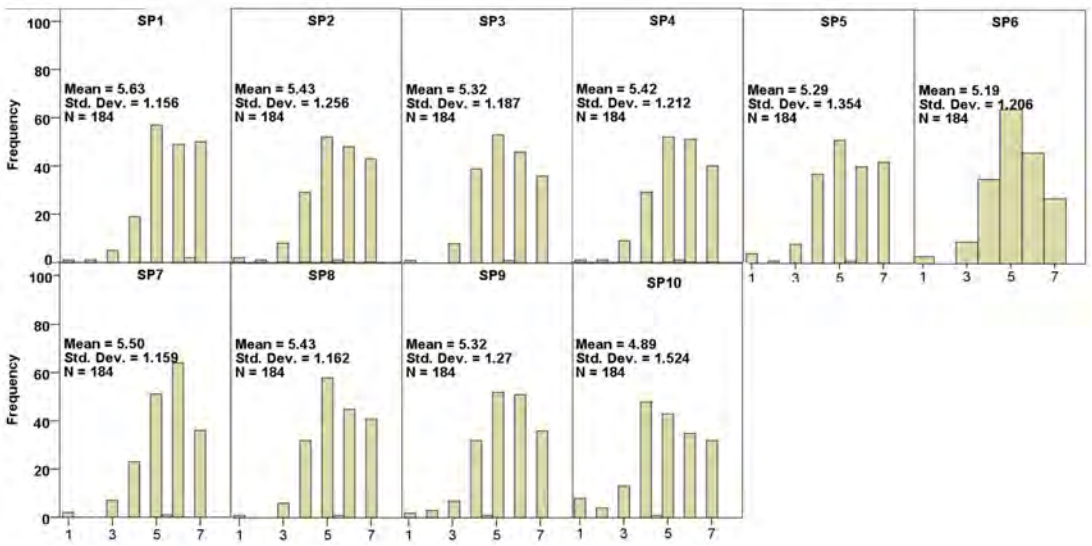

Figure A4.1
Descriptive Analysis for Indicators (Continue)

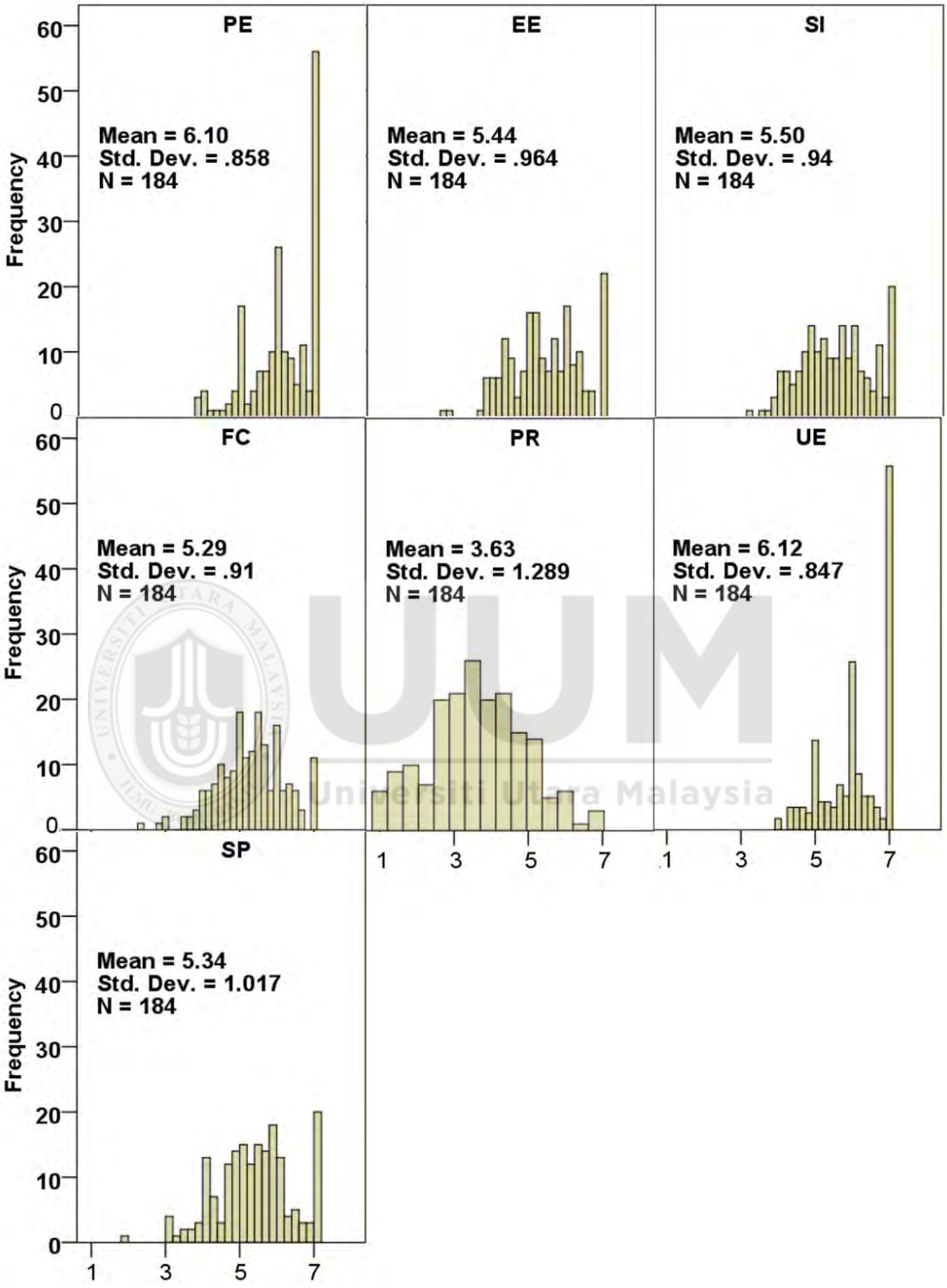

Figure A4.2
Descriptive Analysis for Latent Variables

Table 4.3
Cross Loading

	PE	EE	SI	FC	PR	UE	SP
PE1	**0.931**	0.478	0.533	0.584	-0.182	0.679	0.561
PE2	**0.928**	0.425	0.504	0.580	-0.214	0.693	0.521
PE3	**0.924**	0.511	0.491	0.592	-0.203	0.661	0.559
PE6	**0.865**	0.533	0.592	0.623	-0.178	0.712	0.607
EE1	0.364	**0.844**	0.390	0.468	-0.170	0.393	0.396
EE2	0.435	**0.811**	0.435	0.557	-0.110	0.400	0.373
EE3	0.354	**0.800**	0.383	0.467	-0.149	0.344	0.375
EE5	0.505	**0.758**	0.501	0.558	-0.191	0.553	0.454
EE6	0.440	**0.813**	0.526	0.501	-0.200	0.497	0.485
SI1	0.474	0.440	**0.716**	0.555	-0.067	0.357	0.398
SI2	0.497	0.444	**0.780**	0.610	-0.157	0.425	0.462
SI3	0.405	0.439	**0.774**	0.470	-0.026	0.461	0.457
SI4	0.398	0.311	**0.635**	0.365	-0.180	0.335	0.355
SI5	0.386	0.458	**0.780**	0.415	-0.075	0.385	0.459
FC1	0.388	0.462	0.460	**0.700**	-0.084	0.405	0.437
FC4	0.246	0.347	0.385	**0.506**	-0.008	0.242	0.261
FC5	0.635	0.545	0.526	**0.875**	-0.152	0.623	0.531
FC6	0.550	0.524	0.568	**0.818**	-0.175	0.540	0.437
PR1	0.027	-0.016	0.078	-0.006	**0.629**	-0.076	0.006
PR2	-0.102	-0.074	0.067	-0.056	**0.718**	-0.132	-0.014
PR3	-0.128	-0.116	-0.103	-0.076	**0.791**	-0.173	-0.076
PR5	-0.145	-0.166	-0.077	-0.106	**0.767**	-0.154	-0.070
PR6	-0.271	-0.260	-0.240	-0.225	**0.770**	-0.268	-0.224
UE2	0.727	0.529	0.464	0.676	-0.222	**0.912**	0.596
UE3	0.680	0.505	0.523	0.582	-0.147	**0.931**	0.594
UE4	0.696	0.509	0.471	0.560	-0.294	**0.910**	0.593
UE5	0.663	0.519	0.514	0.556	-0.242	**0.921**	0.598
SP1	0.580	0.401	0.540	0.519	-0.161	0.606	**0.839**
SP2	0.529	0.442	0.480	0.442	-0.176	0.576	**0.875**
SP3	0.604	0.417	0.500	0.501	-0.215	0.591	**0.872**
SP4	0.497	0.432	0.449	0.481	-0.111	0.535	**0.877**
SP5	0.499	0.408	0.472	0.425	-0.022	0.540	**0.832**
SP6	0.495	0.481	0.483	0.426	-0.087	0.441	**0.785**
SP7	0.447	0.450	0.450	0.475	-0.050	0.485	**0.768**
SP8	0.532	0.490	0.503	0.606	-0.117	0.600	**0.894**
SP9	0.412	0.464	0.471	0.447	-0.088	0.442	**0.735**