A STUDY ON IMPLEMENTATION OF INFORMATION TECHNOLOGY (IT) AND ITS RELATIONSHIP WITH FIRM PERFORMANCE

NOOR ELLEZA AQILA BT ABDULLAH

BACHELOR OF INDUSTRIAL TECHNOLOGY MANAGEMENT WITH HONOURS

UNIVERSITY MALAYSIA PAHANG

A STUDY ON IMPLEMENTATION OF INFORMATION TECHNOLOGY (IT) AND ITS RELATIONSHIP WITH FIRM PERFORMANCE

NOOR ELLEZA AQILA BINTI ABDULLAH

Thesis submitted in fulfilment of the requirements
for the award of the degree of
Bachelor of Industrial Technology Management with Honors

Faculty of Technology
UNIVERSITI MALAYSIA PAHANG

DECEMBER 2013

APPROVAL DOCUMENT

UNIVERSITI MALAYSIA PAHANG

CENTER FOR GRADUATE STUDIES

We certify that this thesis entitled "A Study on Implementation of Information Technology (IT) and its Relationship with Firm Performance" is written by Noor Elleza Aqila binti Abdullah. We have examined the final copy of this thesis and in our opinion; it is fully adequate in terms of scope and quality for the award of degree of Bachelor of Industrial Technology Management. We here recommend that it be accepted in fulfilment of the requirements for the degree of Bachelor of Industrial Technology Management with Honors.

Name of External Examiner Signature
Institution:

Name of Internal Examiner Signature
Institution:

SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Industrial Technology Management with Honors.

Signature

Name of Supervisor:

Position:

Date:

STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

Signature

Name:

ID Number

Date:

DEDICATION

Dedicated to my parents, sisters and friends

ACKNOWLEDGEMENTS

I am grateful and would like to express my sincere gratitude to my supervisor Dr. Fatimah binti Mahmud for her germinal ideas, invaluable guidance, continuous encouragement and constant support in making this study possible. She always impressed me with her outstanding professional conduct, her strong conviction, her belief that Bachelor Degree program is only a start of a long-life learning experience. I appreciated her consistent support since I start this study, her tolerance about my naive mistake, and her commitment as my supervisor. I also sincerely thank her for the time spent for proofreading and correcting my mistakes.

My sincere thanks go to all my fellow comrades in Industrial Technology Management course (Norazlina, Siti Nur, Nurul Ajilah, Nurfaridatul), who spent the whole two final semesters with me, who helped me in many ways and made my stay at UMP pleasant and unforgettable. Thanks a lot to those inspirations and support during this study.

I acknowledge my sincere indebtedness and gratitude to my parents Mrs. Fazilah and Mr. Abdullah for their love, dream, and sacrifice throughout my life. I acknowledge the sincerity of my sister Nur Fathehah Haiqa, for her help to make this work possible. I cannot find the appropriate word that could properly describe my appreciation for their devotion, support and faith in my ability to attain my goals and for the successful completion of this study.

ABSTRACT

This study deals with the small and medium enterprises (SMEs) implementation of information technology (IT) and its relationship with firm performance. The objectives of this study are to identify the level of SMEs owners' IT adoption and to analyze the relationship between SMEs owners' IT adoption and firm performance. A 180 survey questionnaire was distributed to foods and beverages SMEs owners in Johor and a total of 166 responses were collected. The data were analyzed by using Statistical Package for the Social Sciences (SPSS). From the results obtained, it is concluded that the SMEs owners in Johor were highly adopting IT in their firm. The Pearson's correlation was tested on the independent variables; IT Infrastructure, Strategic Alignment, Organizational Structure and Individual Learning with dependent variable; Firm performance, discovered that there is a positive correlation coefficient between the IT adoption variables. This field of study were hoped to contribute a deeper understanding on the importance of IT adoption as it can affect the performance of their firm.

ABSTRAK

Kajian ini membincangkan pelaksanaan teknologi maklumat (IT) dan hubungannya dengan prestasi firma terhadap perusahaan kecil dan sederhana (SME). Objektif kajian ini adalah untuk mengenal pasti tahap penggunaan IT oleh pemilik SME dan untuk menganalisis hubungan antara penggunaan IT oleh pemilik SME dan prestasi firma. Sebanyak 180 borang soal selidik telah diedarkan kepada pemilik makanan dan minuman SME di Johor dan sejumlah 166 respon diperoleh. Data dianalisis dengan menggunakan Pakej Statistik untuk Sains Sosial (SPSS). Dari keputusan yang diperolehi, ianya dapat dirumuskan bahawa pemilik SME di Johor amat menerima pakai IT dalam firma mereka. Korelasi Pearson telah diuji ke atas pembolehubah bebas; Infrastruktur IT, Penjajaran Strategik, Struktur Organisasi, Pembelajaran Individu dengan pembolehubah bersandar; Prestasi Firma, mendapati bahawa terdapat pekali korelasi yang positif antara pembolehubah penggunaan IT. Bidang Kajian ini diharapkan dapat menyumbang pemahaman yang lebih mendalam tentang kepentingan menggunakan IT kerana ia boleh memberi kesan kepada prestasi firma mereka.

TABLE OF CONTENTS

CHAPTER 2 LITERATURE REVIEW

CHAPTER 3 RESEARCH METHODOLOGY

CHAPTER 4 RESULT AND DISCUSSIONS

CHAPTER 5 CONCLUSION AND RECOMMENDATION

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

EDI	Electronic Data Interchange
EPU	Economic Planning Unit
IS	Information System
IT	Information Technology
ICT	Information and Communication Technology
MIT90s	Management in the 90s
MITI	Malaysia International Trade and Industry
NEP	New Economic Policy
SMEs	Small and Medium Enterprises
SME Corp.	Small and Medium Enterprises Corporation Malaysia
SMIDEC	Small and Medium Industries Development Corporation
SPSS	Statistical Package for the Social Sciences

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter discusses about the problem background, problem statement, purpose of the study, objective of the study, research questions, expected result, significance of the study and scope of the study, theoretical framework and operational definitions used in this study. This chapter also reviews about the related issues about Information Technology (IT) and its adoption by Small and Medium Enterprises (SMEs) owners' also it relationship between the SMEs firm performance.

From the early 1970, the development of SMEs started in Malaysia when the New Economic Policy (NEP) introduced by the Government in 1971. According to Salleh and Ndubisi (2006), the policy purpose is to improve the people's welfare and restructure ethnic economic imbalances in Malaysia. The need in amplifying SME development is noteworthy since it is expected to be the key component of Malaysia to achieve global competitiveness, economic growth and developed country status by year 2020 (MITI, 2006). Based on census of establishments and enterprise by SME Corp. Malaysia (2011), there is a total of 662,939 SME companies in operations. Out of this, a total of 645,136 or 97.3% were defined as SME. In the distribution of the percentage of SMEs by state, Johor is in the third state higher by 10.7 % after Selangor by 19.5% and Wilayah Persekutuan Kuala Lumpur by 13.1%.

The role of IT is important in improving small businesses' as a contributor to nation's economic growth. However, the use of IT in Malaysia is not so impressive among SMEs entrepreneurs. According to SME Corp. Malaysia (2011), the percentage

of ICT usage among SMEs in business operations is only 27%. The rest 73% of SMEs did not apply ICT in their business operation. But, a very impressive achievement made by SMEs is recorded. The totals of 67% of the SMEs are the internet users, while the rest of 33% are not the internet users. The percentage shows that the majority of SMEs owners know how to use the internet.

The reason of why most of SMEs did not implement IT in their business is due to some factors. One of the important factors is afraid of investing more in IT. Since Malaysia SMEs is more on conducting manufacturing businesses and according to Shaukat and Zafarullah (2010), manufacturing sector is investing much more on IT. Another problem may faced by SMEs are lack of skill and knowledge of using IT. Since the cost for developing IT is very costly for the small-scale firms and most of the employees are from the middle-age workers, they cannot even send their employees to get training or learning IT. Hu (1998) pointed out that technology barrier is one critical road block in knowledge transfer, today the main barrier is people being unable to digest the overabundance of information they have at their fingertips (Smith, 2001). These factors undoubtedly limit the SMEs to adopt IT.

The important of profound study on the IT with the small-scale business is to identify the SMEs owners' perception of IT adoption in Johor, particularly to identify what implication it can bring towards the performance of SMEs in Johor. For the small scale business, the major party that dominantly concern with the decision making is the owner and the executives. They embraced important roles in the decision making which utilizing IT in their companies. Besides, their involvement in the process of technology adoption holds important factor in improving the intensity of the use of IT. The issues related to SMEs and IT will be discussed next in the problem background.

1.2 PROBLEM BACKGROUND

The studies on implementation of IT within SMEs have been limited compared with the large corporation or enterprises. There are several issues that correlated between IT and SMEs. One of the often-raised issues is the impact of IT on small enterprise performance. The benefit of the implementation of IT can improve

organizational performance (Shaukat and Zafrullah, 2010). According to Suhaiza et al. (2006), SMEs with more favorable attitude toward adopting ICT will attain effective knowledge management.

One of the similar problems faced by SMEs entrepreneur are access to management and technology (Wang, 2003), inadequate technological capability (EPU, 2006), and shortage in accessing to ICT and technology development (Saleh and Ndubisi, 2006). According to Toto et al. (2010), there are three main problems in encouraging small business owners to use IT; which is including perception that IT is expensive and, therefore it could not be afforded by small business owners; limited technological resources and lack in IT infrastructure; and both quantity and quality of human resources. Moreover, respondents tend to belief that the internet is useful for their business. They found that learning internet technology is not that easy, however, they are confident that they-supported by adequate training internet technology-will be able to learn it. Interestingly, respondents, on average, still believe and understand that internet technology is difficult to learn and, more than that, to some extent is "frightening".

Some researchers stated that the implementation of IT within firms is costly. Previous research conducted by Dewan et al. (1998) and Hitt (1999) in the study of IT relation with diversified firms concluded that IT can affect firm structure by reducing costs of coordinating economic activities within firms. Dewan et al. (1998) found that diversified firms, especially in related lines of business, make greater investments in IT. They argue that their findings might reflect a greater need for coordination of assets within diversified firms. Hitt (1999) provides similar findings from his analysis of the link between IT and diversification: firms that were more diversified had a higher demand for IT capital. He also argues that increased use of IT is associated with a slight increase in diversification.

According to Lim (2006) most Malaysia's SMEs realize that ICT is critical to the performance and productivity of their companies but the implementation and maintenance of these ICT systems are limited due to the inability to manage, because of high staff turnover and lack of expertise in ICT project management. He also

emphasized that, many Malaysian families-based SMEs are still running their business by conventional means. Therefore, SMEs which has invested in ICT systems failed to perform and retain these systems successfully. Similarly, Tan (2006) argues that ICT in Malaysia is facing big challenges due to the slow adoption of technology by SMEs in Malaysia. He suggested that SMEs must learn to use technology to enhance their competitiveness globally.

From the previous researcher statement above, it can be concluded that the implementation of IT as well as important in improving the firm performance, but there are some shortage that need to be pay a close look with. This shortage could hinder the SMEs to be more efficient in their business operations. The perception itself about 'IT is expensive' should not be a barrier for a firm to keep success. In order to keep survive in this harsh and competitive economic world, SMEs should take the challenges to learn and adapt the technology

1.3 PROBLEM STATEMENT

With the increasing number of SMEs in Malaysia, it is probably meant the increasing of the strong competition between SMEs. To survive in the health business competition, firm tend to use any mean to improve their firm performance. One of the approaches available is the implementation of IT by SMEs owner. IT implementation aligned to business needs, regardless of the business size, is a critical prerequisite for exploiting the potential of IT (Junaidah, 2007). The adoption of IT by SMEs is encouraging a new and more efficient way of doing business and generating new business. To achieve this goal, the government offers loans to SMEs to upgrade the system, technology acquisition, training, electronic commerce activities and consultancy fees (Karkoviata, 2001). However, SMEs in Malaysia still remains in the old notch.

Malaysian businesses, small and medium-sized enterprises (SMEs) have been relatively slow in web adoption. According to Khairul and Ahmad (2005), there are about 30% of Malaysia's SMEs have a website existence and use IT widely in their daily operations. This reflects a poor pace of IT usage among the estimated 600,000 of local SMEs.

The studies on IT within SMEs are very limited compared to a larger enterprise and corporations. The SMEs operators or owners are individuals who should play a bigger part in aiming business's objectives and policies. The approaches toward IT adoption are one small step that the SMEs individuals should set in mind. The application of IT should start with the individuals. For example, the key individuals are the owner, and the intensity of IT application by the owner is deemed to have a major impact on some firm (Myers and Kappelman, 1997).

Therefore, this study will focus on the SMEs implementation of IT and its relationship with firm performance. In this study author are aims to identify the level of SMEs owners' IT adoption and also to examine the relationship between IT adoption by SMEs owners and firm performance.

1.4 OBJECTIVES OF STUDY

There are 2 main objectives of this study. The objectives are:

(i) To identify the level of SMEs owners' IT adoption.

(ii) To analyze the relationship between SME owners' IT adoption and firm performance.

1.5 RESEARCH QUESTIONS

The exploration of this study will covered this two research questions:

(i) What is the level of SMEs owners' IT adoption?

(ii) What is the relationship between IT adoption and firm performance?

1.6 EXPECTED RESULT

(i) Identify the level of SMEs owners' IT adoption.

From the survey result of research, the author will identify the level of SMEs owners' IT adoption in food and beverage industries. From this research, the level of IT adoption among SMEs owners will be determined.

(ii) Analyze the relationship between SME owners' IT adoption and firm performance.

The finding from this research will explore the relationship between IT adoption by SME owners and firm performance. This is because of SMEs owners are the main protagonist in encouraging the fellow employees to learn more about IT in order to improve the firm performance. This study may give impact on SMEs owners in Johor thus encourages them in adopting IT in SMEs.

1.7 SIGNIFICANCE OF STUDY

For the SMEs owners, the proposed study will help them to have a deeper understanding on the importance of IT adoption as it can affect the performance of their firm. Also, it will trigger the new ideas on how to use IT technology to improve their firm performance.

For the government agencies, the proposed study will encourage them to help more SMEs by providing funds for them to improve their company. For example, government agencies can also provide more training, system upgrades, acquisition of technology, consultation fees and electronic trading activities that related to IT learning skills and knowledge.

The proposed study will also help in the creation of general contribution for all area of study and in the creation of a new knowledge for academic areas of study as well. The study will inform the people out there about, the importance of IT adoption in this present time.

1.8 SCOPE OF STUDY

This study conducted on the SMEs implementation of IT and its relationship with firm performance. The study conducted on food and beverage SMEs around Johor. Johor is chosen because Johor is the third state in Malaysia focuses on SMEs business practice. In 2011, the population of SMEs food and beverage company in Johor that are registered with SME Corp. Malaysia is about 314 companies. The expected sample size will be 180 companies. The respondents will be selected randomly from food processing SMEs owners in Johor. The SMEs owners will be chosen as the subject for this study because owners are a key individual for a firm to keep success. The food and beverage processing SMEs will be chosen as the population under study because, it is said that most of food processors are not very aware of the development of technology. The method of this study is surveying. The tool of measuring the survey will be a questionnaire. The survey will be conducted within July and August of 2013. The study will be carried out to identify the SMEs IT adoption level and to study the relationship between IT adoption and firm performance.

1.9 CONCEPTUAL FRAMEWORK

Figure 1.1 shows the conceptual framework of this study. From the Figure 1.1, the relationship between independent variables and the dependent variables can be seen. The independent variables for this study which is IT adoption will be measured by the four factors which are: (i) IT infrastructure, (ii) strategic alignment, (iii) organizational structure and (iv) individual learning. These factors will measure the SMEs owners IT adoption level in their business.

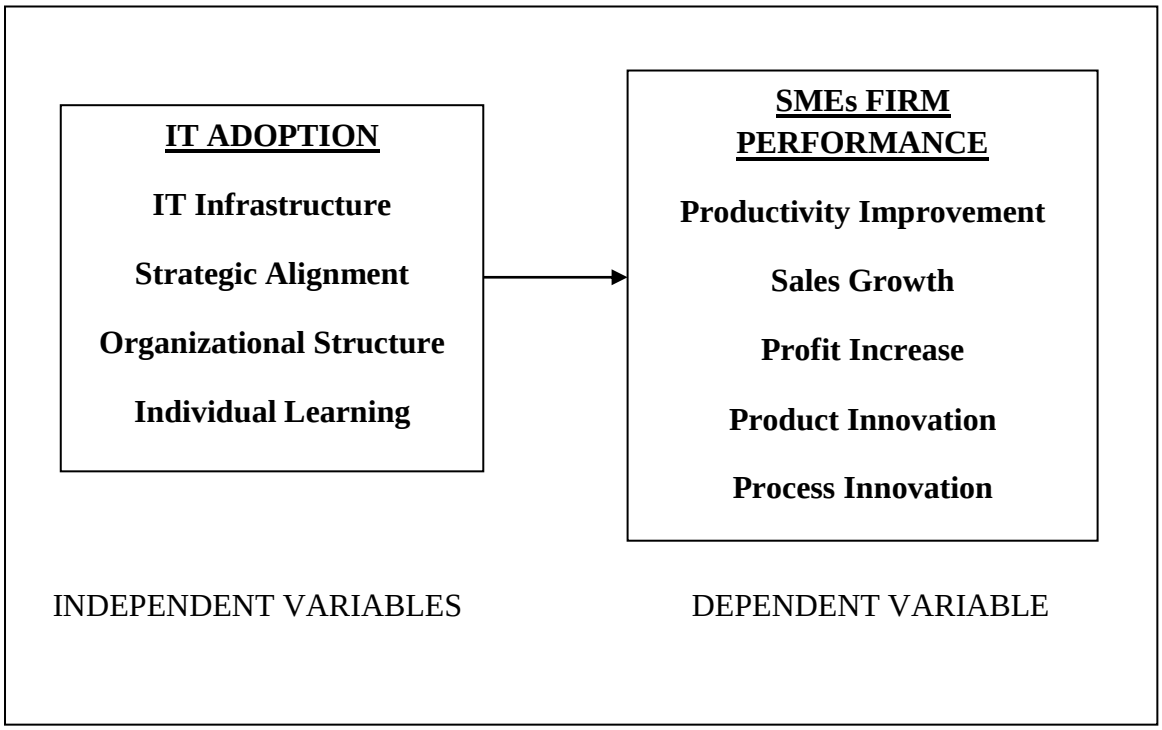

Figure 1.1: A Conceptual framework

Related to that, SMEs firm performance which is dependent variables will be measured based on owners' assessment regarding to their firm performance whether the adoption of IT will affect their firm performance in term of (i) productivity improvement, (ii) sales growth, (iii) profit increase, (iv) product innovation, and (v) process innovation.

1.10 OPERATIONAL DEFINITIONS

1.10.1 Information Technology (IT)

According to Daintith and John (2009), IT is refers to the application of computer and telecommunications equipment to store, retrieved, transmit and manipulate data. Also IT is the study and development of a support-management based, computerized information system (Proctor, 2011). The development is mainly observed in the form of dedicated software applications and a number of hardware programs. In

business perspectives, it also defines an industry that uses computers, software programming, networking and processes to store, retrieve, process, transmit, and protect information (Proctor, 2011). In the current business environment, being proficient in computer is often a necessity for those who compete in the workplace.

1.10.2 Small and Medium Enterprises (SMEs)

The definition of SMEs is updated to take account of the firm's economics performance. Malaysia's Ministry of Internal Trade and Industry (MITI, 2009) defined an SME as a company with (1) an annual sales turnover of not more than RM25 million, and (2) not more than 150 full-time employees. The term SME also have been used in the European Union and by international organizations such as the World Bank, United Nation and the World Trade Organization. Malaysia adopted a common definition of SMEs to facilitate identification of SMEs in the various sectors and subsectors. This has helped the Government to design the effective development policies, provision of technical and financial assistance as well as support programs. An enterprise is considered an SME in each of the respective sectors based on the Number of Full-Time Employees or Annual Sales Turnover as stated by SME Corp. Malaysia.

1.10.3 IT Adoption

IT adoption is described as the willingness of an individual or user to try out any new information technology (Agarwal and Prasad, 1998). According to Dimara and Skuras (2003), adoption of technology is fully informed about the new technology and its potential. In this related definition, it can be concluded that, IT adoption is defined as the users or individuals who are potentially and fully informed about the new related information technology. Since the definition of adoption varies according to the subject, the above definition can be accepted for the purpose of this study.

1.10.4 Firm Performance

The firm performance or organizational performance comprises the actual output or result of an organization or firm as measured against its intended outputs (or goal and objectives). Organizational performance encompasses three specific areas of firm outcomes: (a) financial performance (profit, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.) (Richard et al., 2009).

1.10.5 Food Processing Industries

The processing of food can be defined in many ways. A simple definition of food processing is the conversion of raw materials or ingredients into a consumer food product (Heldman and Hartel, 1997). According to this definition, the food processing industries is the sectors that converse the raw materials or ingredients in food products. This definition is considered accepted for the purpose of this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The organizations or firms increasingly rely on IT to improve their performance. Nowadays, all of works related to the application are now completely automated, thanks to IT. Thus, the IT become tools that has brought significant improvements in business operation. Now that SMEs business field has become very competitive, there is a need to use IT to remain ahead in business. With IT, it is expected that the performance of SMEs will be increased. So, the IT has some effects on SMEs performance, which is being taken as a benchmark by another SMEs business.

What is the relevance in adopting IT in business? The answers might be bred due to the individuals' perception. In business, IT are very important in supporting business accounting, financial, marketing, production or/and operation management, human resources management and also management information systems (MIS). There is nothing that can limit IT role in business.

In Malaysia, IT is seen as medium to improve business capabilities and performances. IT adoption by small business often viewed as a basic building block of economic development. SMEs in Malaysia for example, belong to the sectors that still sunken from technological development. There are so many obstructions that hindered the SMEs in Malaysia to use IT in their firm. There are several reasons why most of SMEs in Malaysia did not implement IT in their firms. One of the important factor is the cost of investing in IT are too much for SMEs to bear. Moreover, they may face problem such lack of knowledge and skills in using IT. These reason showed that SMEs

face a very critical technology barrier in this era of technology and this shortage may limit SMEs in becoming efficient in business operation (Salleh and Ndubisi, 2006).

However, not every negative view is received from the SMEs about IT adoption in their firms. As revealed by Toto et al. (2010) stated that some of SMEs tend to belief that the internet is very useful for their business despite their perceptions on IT is not an easy. Thus, they are confident that if they supported by an adequate training, they will be able to learn it.

With that, this study aims to explore the level of IT adoption among SMEs owner in Malaysia and revealed the relationship of IT adoption to firms' performance.

2.2 SMEs AND IT ADOPTION

Most of the businesses have now accepted IT as an important tool to increase its business performance as well as in the global market. In order to increase the effectiveness of IT, the companies can use the internet to promote almost unlimited information about their products and services. In future, it is believed that IT in Malaysia SMEs sectors will grow more rapidly.

As been defined in chapter 1, IT adoption can be concluded as the users or individuals who are potentially and fully informed about the new related information technology.

The factors that affecting technology adoption can be divided into organizational, technological and environmental characteristics and these three factors have positive influences on the adoption of ICT (Suhaiza et al., 2006). They also concluded that SMEs with more favorable attitude toward adopting ICT will attain effective knowledge management. Moreover, it is found that higher explicitness and accumulation of technology can help the transfer of technological knowledge within the organization and can raise the capability to adopt ICT. SMEs can increase their adoption abilities by encouraging or supporting their employees to adopt ICT as well as by training and educating their employees to become intelligent workers.

According to Syed Shah and Nilufar (2007) in their previous research, most of the companies were not actively participate in the development of ICT in their business operation. About 78.89% of the 180 companies in their study never develop a formal ICT training plan for employees, and that makes the companies lacks of trained personnel in IT implementation. Next, about 90.56% of the companies never develop a website for their business. This is mostly comes from the factors of the SMEs have limited financial budget with smaller business structure and even smaller number of employees. However, 74.44% of the companies were asked by their customer or trading partner to use email when dealing with business matter. This can be believed that emails were used as a communication channel by these portions of companies. A result, email can be the most effective electronic communication method between companies in the small business. The outcomes of the study reveal that the investment on ICT in Malaysia is relatively low since the most respondents of the study are unwilling or unable to adopt ICT in their business due to several reasons.

2.2.1 IT Adoption Level

There are some variable used to measure the level of IT adoption since it is a subjective matter. From the evaluation about their firms' IT adoption, the author can identify their level of IT adoption.

Most of the used levels of IT adoption are categorical as adopter and non adopter. In several studies, partial adopter and the full adopter term were used. To relate to formation system application and/or adoption Van Akkeren and Cavaye (1999) classified small enterprises, into three groups: non-adopter; adopter; and full-adopter. There are no specific definition for non-adopter, adopter and full-adopter.

IT adoption described as the willingness of users to try out any new information technology (Agarwal and Prasad, 1998) and fully informed about new technology and its potential (Dimara and Skuras, 2003). From these definition, it can be concluded that the non- adopter is individual that not willing to try out any new information technology and not fully informed about its potential. Whereas, the full-adopter can be defined as an individual who already expert in using new information technology and fully

informed about its potential. For adopter, it can be defined as individual who potentially willing to try new technology but lack of information about new technology and its potential.

The measurers for the IT adoption level are based on the four elements in Morton's Management in the 90s (MIT90s) Model (1995).

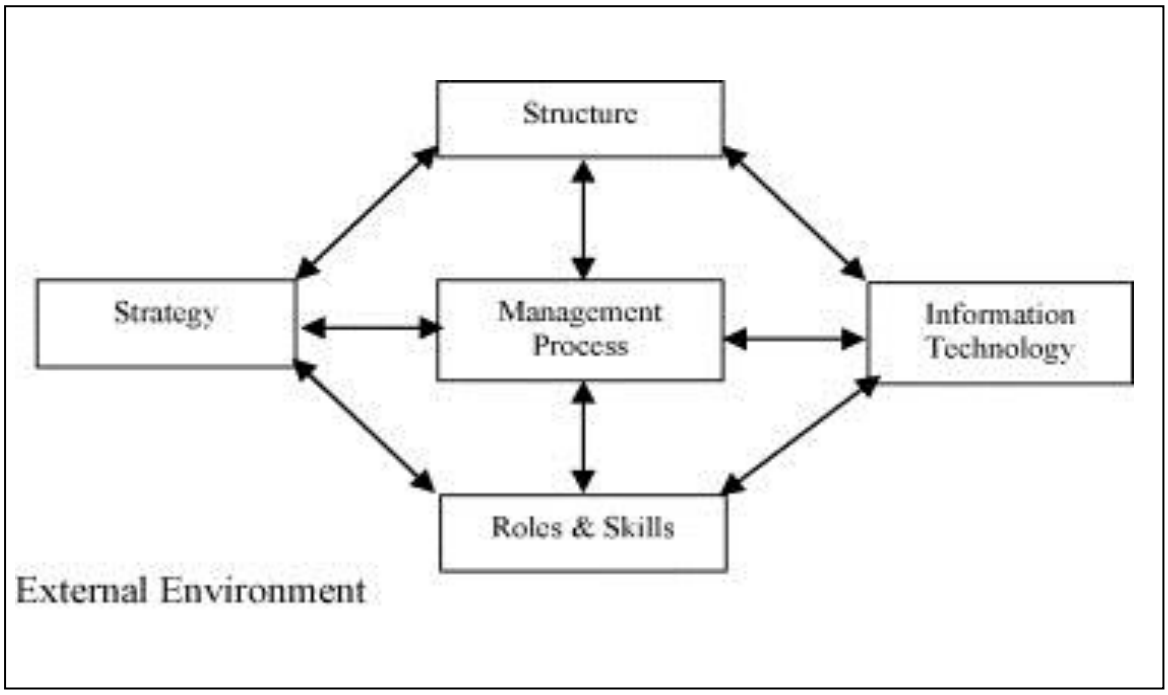

Figure 2.1: Morton's MIT90s Model 1995

Source: Morton (1995)

The term of the four elements is slightly modified as information technology infrastructure, strategic alignment, organizational structure and individual learning, without leaving the original meaning. For management process, it is considered separately for this study.

These four elements will be used as an independent variables in IT adoption measuring elements and included in this study conceptual framework (Figure 1.1).

2.2.2 IT Adoption Elements

Below are the simplest definitions on four basic elements in measuring IT adoption.

a) IT Infrastructure

According to Davenport et al. (1819), the IT infrastructure includes networks, management and allocations of massive computing, electronic data interchange (EDI), shared databases, and research and development to identify emerging technologies. The IT infrastructure will be measured by using four items that refer to the firm investment in related software, hardware, staffing and advanced internet application (Bharadwaj, 2000; Sircar et al., 2000).

b) Strategic Alignment

According to Chan et al. (1997) and Palmer and Markus (2000), strategic alignment suggest the effect of IT on performance will depends on how well the IT strategy and corporate strategy coincide. Henderson and Venkatraman (1993) added, the companies will be successful in aligning their business strategies and IT by balancing internal and external factors as well as business and IT domains. The strategic alignment will be measured using four items that refer to the firm alignment of its IT strategy with its corporate strategy to achieve greater effectiveness (Palmer and Markus, 2000; Reich and Benbasat, 1996 and Venkatraman, 1989).

c) Organizational Structure

Porras and Robertson (1992) state that organizational structure specifies the formal line communication; helps control, coordinating work activities also defines the work role allocation. While IT is being adopted, organizational structure often re-examines and adjusted to improve performance via innovation, pooled resources, and collaboration across organizational boundaries (Dewett and Jones, 2001). Organizational structure will be measured by using five items including organizational structural change for new business practices and for increasing employee empowerment, enabling inter-department or cross-functional integration, improving

timely response in managerial decision making and enhancing operations mobility (Flippo, 1966; Mintzberg, 1979; Porras and Robertson, 1992 and Zaltman et al., 1973).

d) Individual Learning

For the SMEs to effectively take advantage of IT, both SMEs owners and employees must acquire new IT related skills and knowledge. Furthermore, the successful adoption of new IT requires SMEs owners to adapt and provide employee support and training to grab a greater benefit beyond the change in technology. Individual learning will be measured using five items including the learning skills, and knowledge gained which can effectively manipulate IT application (Barret, 1995; Chonko et al., 2003; Grover et al., 1999 and Zahra and George, 2002).

2.3 FIRM PERFORMANCE

Firm performance is one of the most relevant construct in the field and commonly used as the final dependent variable (Richard et al., 2009) in various fields. Though its relevance, firm performances' researches often suffer from problems such as a lack of consensus, selection of indicator based on convenience and little consideration of it dimensionality (Combs et al., 2005; Crook et al., 2008 and Richard et al., 2009).

According to Santos and Brito (2012), two major contributions can be identified; one is instrumental and another is conceptual. Instrumental related to scale which can be used in empirical studies and the conceptual contribution relates to the discussion of performance dimensionality. Santos and Brito (2012) stated that, the financial performance loading on profitability and growth. Thus, measuring growth and profitability simultaneously seems conceptually justified.

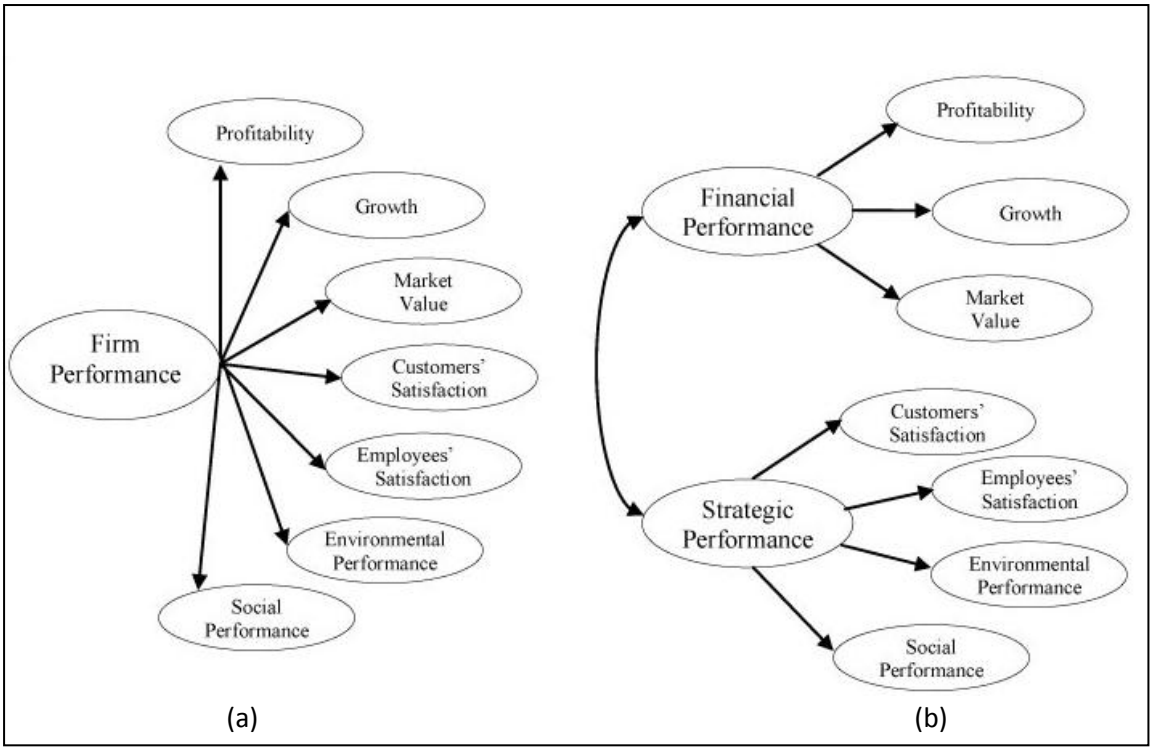

Figure 2.2: Second Order Model

Source: Santos and Brito (2012)

Figure 2.2 shows the Second Order Model used by Santos and Brito (2012). This model shows the relation of elements used in measuring the firm performances. Glick et al. (2005) suggest that firm performance could be conceptually represented by one second-order constructs reflecting itself on its first-order dimensions (Figure 2.2, (a)). The Venkatraman and Ramanujam (1986) conceptual model proposes an alternative representation, where the performance will have two second-order dimensions; the financial one, represented by growth, profitability and market value; and the operational domain, which includes non-financial competitive aspects, for examples customer and employee satisfaction, innovation, quality and reputation (Figure 2.2, (b)).

Table 2.1: Firm performance elements and Researchers

Firm Performance Elements	RESEARCHER						
	Senn & Lee (1995)	Brynjolfsson & Hitt (2000)	Toto et. al (2010)	Chen & Tsou (2007)	Bloch et al. (1996)	Fruhling & Digman (2000)	Porter (2001)
Productivity Improvement		✓	✓	✓			
Product Innovation			✓	✓	✓	✓	✓
Process Innovation			✓	✓	✓		
Sales Growth			✓	✓		✓	✓
Market Growth						✓	
Profitability			✓	✓			
Revenue	✓						

There are several elements that used by previous researches to evaluate their firm performance as tabulated in Table 2.1. Based on these findings, the author intent to use the most often used elements for measuring the firm performance which are productivity improvement, sales growth, profit increase, product innovation and process innovation.

2.4 RELATIONSHIP BETWEEN IT ADOPTION AND FIRM PERFORMANCE

The relationship between IT adoption and firm performance has often become a hot issue in this field of study. Several studies of previous researchers concluded the differences in their study outcomes.

Bitler (2001) investigated the relationship between information technology investment and small firms' performance, by using regression models. The results of his

study found that there was a significant performance difference between firms adopting information technology and those who are non-adopting information technology.

According to Toto et al. (2010) in their investigation on IT adoption relationship and firm performance concluded there is no significant relationship between SMEs IT adoption and firm performance.

However, the previous research by Shin (2006) provides empirical evidence for the impact of IT on the performance of diversified firms by focusing on the economic benefits of diversification that can be leveraged by IT, a subject that has received little attention in prior economics and Information System (IS) research. In addition, by grouping firms by the extent of diversification and by using an interaction term of IT and diversification, this research demonstrates that the effect of IT on financial performance is not the same for all firms, but may depend on strategic choices such as diversification.

It can be concluded that, the relationship between IT adoption and firm performance may vary due to some factors or limitations. However, it is the author intent to find out whether there is a relationship between IT adoption and firm performance in food and beverage industry in Johor, Malaysia.

2.5 CONCLUSION

This chapter reviewed the sources used by previous researcher to conduct the research related to IT adoption and firm performance. In the next chapter, author will explain about research methodology used for conducting this study.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

This chapter extracts the methods used to study the implementation of IT and its relationship with the firm performance. In this chapter, the author discussed profoundly about the data collection method, research approach, survey and data analysis method used in this study.

3.2 DATA COLLECTION METHOD

There are two types of data used in this study. There are primary data and secondary data.

3.2.1 Secondary data

Secondary data were the published data and the data collected in the past or from previous researches or studies. Secondary data collection may be conducted by collecting from diverse sources of documents or electronically stored information, census and market studies are examples of common sources of secondary data. This is also known as “data mining”. These secondary data can be obtained from many sources, including industry surveys, literature, computerized databases and information system, and computerized or mathematical models of environment process. For example, the sources of secondary data are published in printed sources, books, journals or periodicals, magazines or newspapers, published electronics sources, e-journals, general

websites, weblogs, unpublished personal records, government records and public sector records (Ibrahim, 2012). As for this study, the author used books, journals, websites, governmental records and published electronics sources as research source.

3.2.2 Primary data

Primary data means the original data that have been collected specially for the purpose in mind. In this study, the primary data are data that collected by the author. Data collected by this means is called primary data. The primary data have not published yet and is more reliable, authentic and objective. Primary data also has not been altered by human being, therefore its validity far greater than secondary data. There are several sources in gathering the primary data for example, experiments, survey, interview and observations (Ibrahim, 2012). But in this study, the author used survey as the method in collecting the data.

3.3 RESEARCH APPROACH

This section discussed about the research approach used in this study which is quantitative approach.

3.3.1 Quantitative Approach

"Quantitative research consists of those studies in which the data concerned can be analysed in terms of numbers. It is based more directly on it original plans and its results are more readily analysed and interpreted," Best and Khan (1989). According to Blaxter et al. (1996), as the term suggests quantitative research concerned with the collection and analysis of data in numeric form. It tends to emphasize the relatively large scale and representative sets of data. Punch (1998) in other hand also stated that quantitative research empirical research where the data are in the form of numbers.

However, there are some advantage and limitation in using quantitative approach. Table 3.1 shows the advantage and limitation in using quantitative approach according to Burn (2000).

Table 3.1: Quantitative approach advantages and limitations

ADVANTAGES	LIMITATIONS
Precision- through quantitative and reliable measurement	Because of complexity of human experience it is difficult to rule out or control all the variables
Control- through sampling and design	Because of human agency people do not all respond in the same ways as inert matter in physical sciences
Ability to produce causality statement, through the use of controlled experiments	It is mechanistic ethos tend to exclude notion of freedom, choice and moral responsibility
Statistical techniques allows for sophisticated analyses	Quantification can become and end in itself
Replicable	It fails to take account of people's unique ability to interpret their experiences, construct their own meaning and act on these
	It lead to assumption that facts are true and the same for all people all of the time
	Often produce banal and trivial findings of little consequence due to the restriction on and the controlling of variables.
	It is not totally objective because the researcher is subjectively involved in the very choice of a problem as worthy of investigation and in the interpretation of the result.

Source: Burn (2000)

3.3.2 Methodology Flow Chart

As shown in Figure 3.1 the methodology flow chart for this study was constructed based on Checkland (1991).

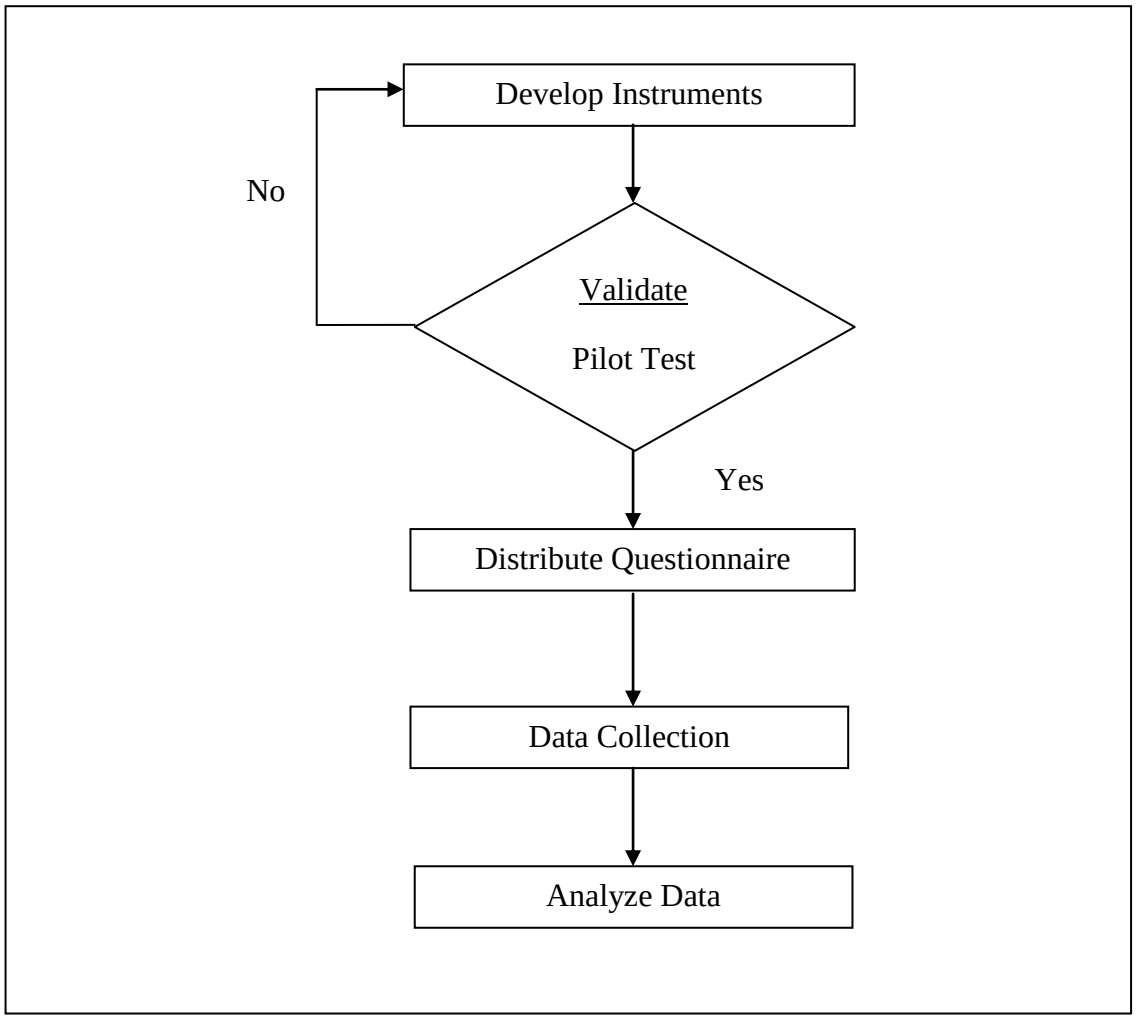

Figure 3.1: Methodology Flow Chart after Checkland (1991)

Source: Checkland (1991)

Questionnaire research design proceeds in an orderly and specific manner. Each item in the flow chart depends upon the successful completion of all the previous items. Therefore, it is important not to skip a single step (Walonick, 1997).

3.4 SURVEY

The survey is most commonly used method in management, social sciences, psychology and marketing to some extent. The survey can be conducted in different ways. The examples of instruments in conducting surveys are questionnaire, interview and observation (Ibrahim, 2012). In this study, the author used survey as a method and questionnaire as an instrument to collect the data. The survey method of collecting data was chosen because of its function in generalizing the result from a sample to a larger population. It is quite rare for a survey to consist of one or a very few individual since surveys are interested in gathering data from many individual. In the mean time, the questionnaire used as a tool in conducting surveys.

3.4.1 Sampling

Sampling is the process of choosing a representative portion of the entire population. There are two basic sampling techniques used in nursing research; probability (random) sampling and non-probability (non-random) sampling. Non-probability sampling is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected. The probability sampling is a sampling technique where the samples are gathered in a process that gives all the individuals in the population equal chances of being selected. The Figure 3.2 below shows the sampling techniques methods.

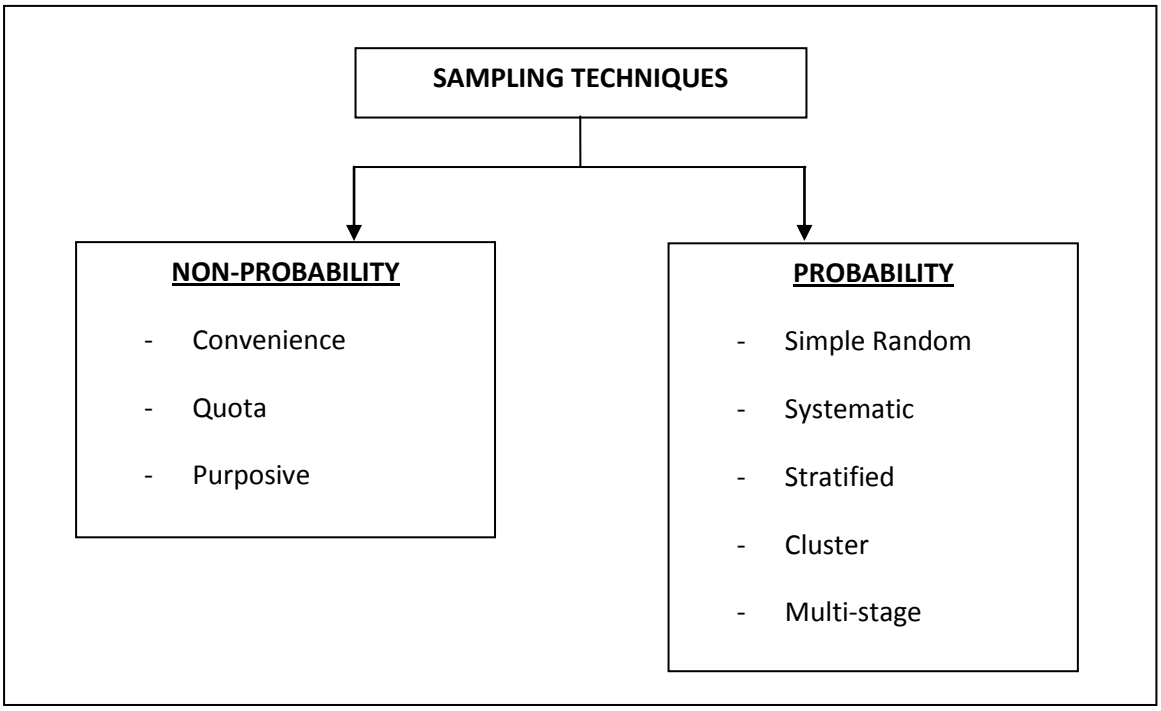

Figure 3.2: Sampling techniques

Source: Babbie (2001)

In this study, the author used a simple random sampling technique. It is the basic sampling method assumed in statistical methods and computations. To collect a simple random sample, each unit of the target population will be assigned a number. A set of random numbers is then generated and the units having those numbers are included in the sample. To fulfil this sampling method, researcher will have to gather the lists of food processing SMEs in Johor first. For example, researcher already has a population of 314 foods and beverages SMEs in Johor, and wishing to choose a simple random sample of 180 people. First, each SME is numbered 1 through 314. Then, the author will generate a list of 180 random numbers and those individual assigned to those numbers are the one the researcher will include in the sample.

3.4.2 Questionnaire Design

No survey can achieve success without a well-designed questionnaire. Unfortunately, questionnaire design has no theoretical base to guide the researcher in developing a flawless questionnaire. There are no hard and fast rules on how to design a questionnaire, but there are some points that can be borne in mind (Sudman and Bradburn, 1973):

(i) A well-designed questionnaire should meet research objectives.

(ii) The questionnaire designer must ensure that the respondent fully understand the questions, not likely to refuse to answer. A good questionnaire is organized and worded to encourage the respondent to provide accurate, unbiased, and complete information.

However, according to Crawford (1990), there are nine steps involved in the development of a questionnaire. There are:

(i) Decide the information required
(ii) Define the target respondents
(iii) Choose the method(s) of reaching the targets respondents
(iv) Decide on question content
(v) Develop the question wording
(vi) Put questions into meaningful order and format
(vii) Check the length of the questionnaire
(viii) Pre-test the questionnaire (Pilot test)
(ix) Develop the final survey form

A questionnaire is the commonly used method in the survey. Questionnaires are lists of questions either open-ended or closed-ended for which the respondents give answers. The questionnaire can be conducted via telephone, mail, and live in public area, or in an institute, through electronic mail or fax (Ibrahim, 2012). As for this study, the subjective questionnaire used to identify the level of SMEs owners IT adoption. The

questionnaire was randomly distributed to the SMEs owners of food and beverage industries in Johor.

As for this study, the questionnaire was designed in bilingual, Malay and English, since not all respondents are fluent in English language. The questions chosen for the questionnaire will be closed-ended, which will help the respondents to make a quick decision and help author to coding the information easily for data analysis.

The questionnaire consists of three sections; Section A, Section B and Section C. In Section A, the respondents were asked about a demographic question for example, age, gender and race. The respondents were allowed to choose one answer only. Section B asked about firms' level of IT adoption according to SMEs owners' evaluation. In this section, there were 4 questions with total 18 sub-questions. Section C asked about the firms' performance. In this section, there were 5 total questions. For Section B and Section C, 5 Likert Scale type question were used. Respondent were asked to rate their perception on each statement based on either (i) very low, (ii) low, (iii) neutral, (iv) high and (v) very high.

3.4.3 Questionnaire Validation

(i) Pilot Test

Until the questionnaire actually has been used in surveys and with respondents, it's impossible to say whether it is going to achieve the desired result. Thus, it is necessary to pre-test the questionnaire before it is used in a full-scale survey, to identify any mistakes that need correcting and this act is recognized as Pilot test (Crawford, 1990). The purposes of pilot testing are to determine whether;

(i) the questions will achieve desired results
(ii) the questions understood by respondents
(iii) the questions are arranged in good order
(iv) the instructions given are adequate
(v) additional or specific questions are needed or should be eliminated

Usually, a small number of respondents are selected for pilot test. In this study, researcher intent to pick randomly 30 respondents as a subject for the pilot testing.

(ii) Reliability Analysis and Cronbach's Alpha

According to Zhang and Kwok (2003), reliability means consistency. It is the degree to which an instrument will give similar results for the same individuals at different times. Reliability can take on values of 0 to 1.0, inclusive. The purpose of reliability analysis is to compute the Cronbach's alpha which is used to identify whether the variables are reliable or not. Cronbach's alpha is the common measure of internal consistency or known as reliability. It is the most commonly used to test the reliability of multiple Likert scale type questions to see if the scale is reliable or not.

3.4.4 Questionnaire Distribution

This section will explain more about the background of the respondents, location, and duration of the research, research population, research sample, and method of questionnaire distribution.

(i) Background of the respondents

Before starting a survey, the most important things to do is the selection of respondents who will participate in the study (Fraenkel and Wallen, 1996). The participants that will be selected to answer the questionnaire for this study are the SMEs owners (or their representatives) of food and beverage industries in Johor.

(ii) Location

The location for implementing this study is around Johor, Malaysia. Johor is picked as the location under study because Johor is the third largest state that developed with SMEs industries after Selangor and Wilayah Persekutuan Kuala Lumpur (SME Corp. Malaysia, 2011).

(iii) Duration of the research

The survey will be conducted in two months time that is in July and August of 2013. During this time, the author will distribute the questionnaire to SMEs owners (or representatives) and collecting the data for data analysis.

(iv) Research Population

According to IT Department, SME Corp. Malaysia (2011), the population of food and beverage SMEs in Johor are 314 in total. To make the result valid, the author refers to the table for determining random sample size from the given population from Accreditation Study Course 2003 (Payne and McMorris, 1967).

(v) Research Sample

With 95% of confident level and margin of error + or – 5%, the table by Payne and McMorris (1967) suggest that the sample size of respondents will be 145 respondents. As stated before, this study will be conducted among SMEs owners' perception on IT adoption and the relationship between IT adoption by SMEs owners and firm performance on food and beverage industries in Johor.

(vi) Questionnaire Distribution Methods

There are varieties of options for inviting respondents to answer survey questionnaire. Before, the author already explains about the sampling techniques that will be use in this study, which is simple random sampling. By choosing the simple random sampling, author gathered a list from a target population, randomly selects names from it and distributes the questionnaire to these names.

There are no specific ways or rules in distributing the questionnaire. Therefore, for this study the author used SMEs information such as, phone number, email or fax number in order to distribute the questionnaire. The Google Docs forms application on Google also was used as a medium to distribute the questionnaire.

3.5 DATA ANALYSIS METHOD

The data collected were analyzed by using Statistical Package for the Social Sciences (SPSS 16.0). This technique was used to calculate and determine the information according to answers from respondents in survey questionnaires. The data were keyed into the SPSS for the statistical techniques. There is some data analysis that will be used in this study:

i) Descriptive analysis

A set of brief descriptive coefficient that summarizes a given data set, which can either be a representative of the entire population or sample. The example of descriptive analysis is the measure of central tendency and measure of variability or dispersion. For example, measures of central tendency include the mean, median and mode, while measures of variability include the standard deviation (or variance) and the minimum and maximum variables.

ii) Reliability analysis

According to Zhang and Kwok (2003), reliability means consistency. It is the degree to which an instrument will give similar results for the same individuals at different times. Reliability can take on values from 0 to 1.0, inclusive. The purpose of reliability analysis is to compute the Cronbach's alpha to identify whether the variables are reliable or not. Cronbach's alpha is the common measure of internal consistency or known as reliability. It is the most commonly used to test the reliability of multiple Likert scale type questions to see if the scale is reliable or not.

iii) Correlation analysis

Correlation test is also necessary in this study because in order to get and find the relationship between independent variables with the dependent variable (McColl and Easton, 2007). Results are between -1 and 1. A result of -1 means that there is a perfect negative correlation between the two values at all, while a result of 1 means that there is a perfect positive correlation between the two variables. A result of zero means that there is no linear relationship between the two variables. In other words, the closer

the value of r get to zero, the greater the variation the data points are around the line of the best fit.

3.6 CONCLUSION

This study was used the quantitative method through survey and used the questionnaire as instrument. The survey instrument was validated before distribution by using the reliability test. Data collected from survey will analyze using the SPSS. Next, the result and discussions on the data analysis study will be discussed in the next chapter.

CHAPTER 4

RESULT AND DISCUSSIONS

4.1 INTRODUCTION

This chapter presents the result and discussions on research findings of the statistical analysis conducted on the collected data. The data analysis structured by showing reliability analysis, the demographic of the respondents through descriptive statistic. Pearson Correlation Analysis was conducted to show the relationship among the variables used.

A total of 180 questionnaires were distributed to the respondents. Out of 180 questionnaire distributed, 166 (92%) responses were collected, 14 (8%) failed to collect. All 166 (92%) responses were completely answered. Thus, these 166 questionnaire responses were used in the analysis.

4.2 RELIABILITY ANALYSIS

In order to ensure the reliability of the variable measurement, Cronbach's Alpha coefficient was computed. Cronbach's Alpha is the most common measure of internal consistency ("reliability") (Cortina,1993; Green et. al, 2003). It is most commonly for multiple Likert scale questions in a survey/questionnaire.

Internal Consistency is usually measured with Cronbach's Alpha, a statistic calculated from the pairwise correlations between items. Internal consistency ranges between zero and one. A commonly accepted rule of thumbs for describing internal consistency used by George and Mallery (2003) are as shows in Appendix D.

Table 4.1 shows the Cronbach's Alpha for IT adoption which is used as Independent variables for this study. From the table, the value of Cronbach's Alpha for 18 items from Section B in the questionnaire is 0.957. The Cronbach's Alpha value indicates that the items were in excellent internal consistency and the questionnaires are reliable to be distributed.

Table 4.1: Cronbach's Alpha for IT adoption (independent variables)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.957	.957	18

Meanwhile,the item-total statistic for IT adoption (see Appendix E) present the value that Cronbach's Alpha would be if that particular item was deleted from the scale. From the table, the removal of any question, except question V4e would result in a lower Cronbach's Alpha can be seen. Therefore, these questions must not be removed. However, the removal of question V4e would lead to a small improvement in Cronbach's Alpha because its value on "Corrected Item-Total Correlation" was low (0.215) for this item. As a result, this item has been kept as a question in the questionnaire since the Cronbach's Alpha in Table 4.1 indicates the high value of Cronbach's alpha.

The Cronbach's Alpha for Firm Performance (dependent variables) items in the questionnaire was shown in Table 4.2. Questions in Section C represent SMEs Firm Performance or dependent variables used in this study. The questions in this section were evaluated using five Likert-scale. The Cronbach's Alpha value of 0.941 indicates high value, excellent internal consistency and the items are reliable to be distributed.

Table 4.2: Cronbach's Alpha for firm performance (dependent variables)

Reliability Statistics	
Cronbach's Alpha	N of Items
.941	5

Table 4.3 presents the value that Cronbach's Alpha would be if that particular item was deleted from the scale. From the Table 4.3, the removal of any item, except "Improvement in Productivity" would result in a lower Cronbach's Alpha can be seen. Therefore, these items must not be removed. But, the removal of items "Improvement in Productivity would lead to a small improvement in Cronbach's Alpha because its value on "Corrected Item-Total Correlation" was low (0.586) for this items. As for the author, this item still being kept in the questionnaire since the Cronbach's Alpha in Table 4.2 indicates higher value of Cronbach's alpha (0.941).

Table 4.3: Item-total statistics for firm performance (dependent variables)

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Improvement in Productivity	12.81	9.126	.586	.973
Sales Growth in Product Selling	12.81	8.181	.892	.918
Increasing in Profit	12.81	8.023	.913	.913
Create Product Innovation	12.81	8.165	.924	.912
Create Process Innovation	12.79	7.973	.917	.913

As a conclusion, from the reliability analysis conducted shows that all the of items in questionnaire give the Cronbach's Alpha value range from 0.941 to 0.957. It indicates that these survey questionnaires is reliable and have a high consistency.

4.3 RESPONDENTS DEMOGRAPHIC

The demographic of the respondent and company such as gender, age, race, educational level, firm years of operation and firm years of IT adoption were presented in this section. Table 4.4 summarizes the demographic information of the respondents and their company.

Table 4.4: Respondents demographic

Demographic Variables	Frequency	Percent
Gender		
Male	80	48.2
Female	86	51.8
Age		
20 to 30	80	48.2
30 to 40	73	44.0
40 and above	13	7.8
Race		
Malay	70	42.2
Indian	53	31.9
Chinese	39	23.5
Others	4	2.4
Educational Level		
Primary School	9	5.4
Secondary School	70	42.2
Diploma	66	39.8
Bachelor Degree	20	12.0
Others	1	0.6
Firm Years of Operation		
Less than 1 year	25	15.1
1 to 5 years	88	53.0
5 to 10 years	44	26.5
10 years and above	9	5.4
Firm Years of IT adoption		
Not adopt at all	2	1.2
Less than 1 year	31	18.7
1 to 5 years	88	53.0
5 to 10 years	42	25.3
10 years and above	3	1.8

Figure 4.1 shows the gender of total 166 respondents. Majority of the respondents of this study are belong to females with a total of 86 (51.8%) while the rests 80 (48.2%) respondents are male. This finding shows that most of the SMEs owners in Johor are female.

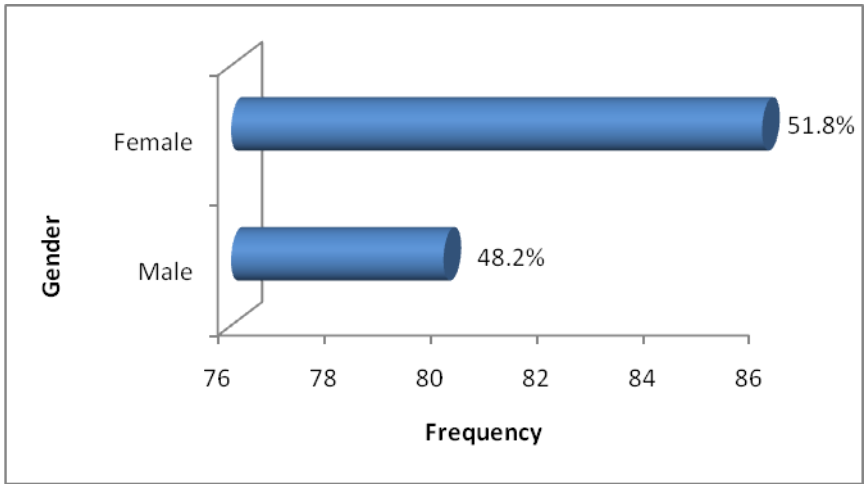

Figure 4.1: Gender

Figure 4.2 shows the range of respondents' age that involve in this study. As can be seen in Figure 4.2, the number of respondents age between 20 to 30 years old is 80 (48.2%), 30 to 40 years old is 73 (44%), and 40 years old and above is 13 (7.8%). It concluded that the majority of SMEs owners are belong to 20 to 30 years old.

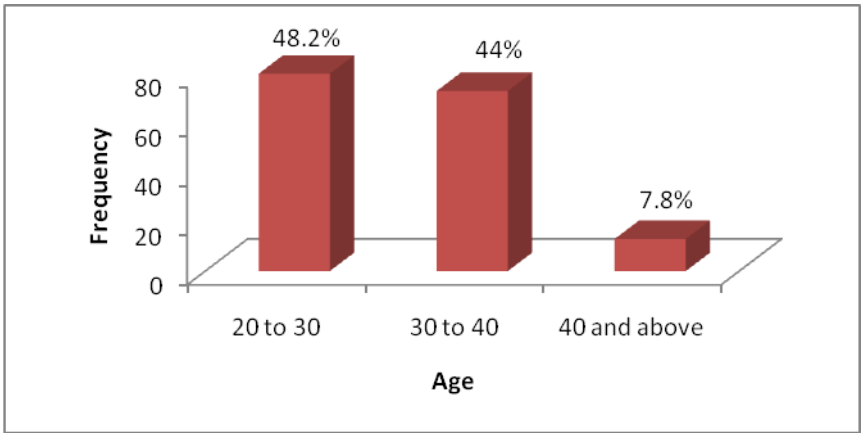

Figure 4.2: Age

The tabulation of race of respondents was interpreted in Figure 4.3. For the respondents race, the number of Malay respondents are 70 (42.2%), 53 (31.9%) are Indian, 39 (23.5%) are Chinese and 4 (2.4%) belong to Others. This concluded that the majority SMEs owners picked for this study are Malay, followed by Indian and Chinese. However, it can be concluded that the majority of SMEs owners in Johor is Malay.

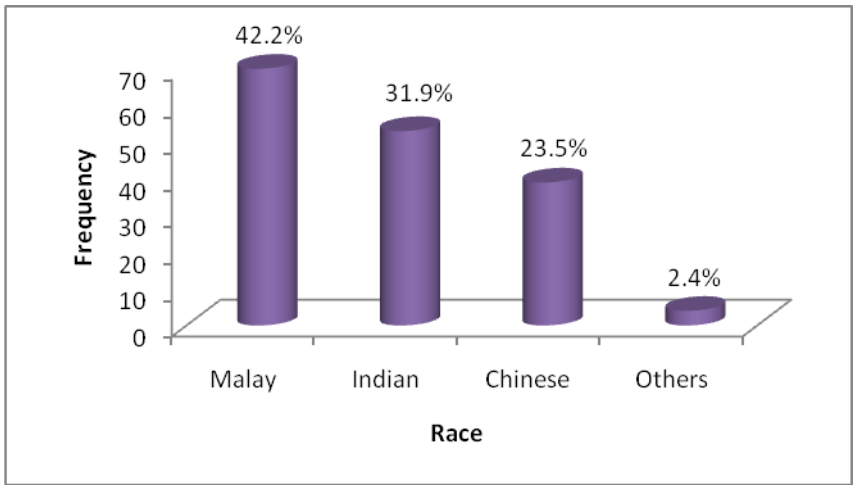

Figure 4.3: Race

Figure 4.4 shows the educational level of the total 166 respondents for this study. The majority of respondent educational levels is from secondary school (70, 42.2%) followed by diploma (66, 39.8%), bachelor degree (20, 12%), primary school (9, 5.4%) and others (1, 0.6%). With that, it can be concluded that the majority of the SMEs owners in Johor are not too highly educated in studies and most of them only finished secondary school.

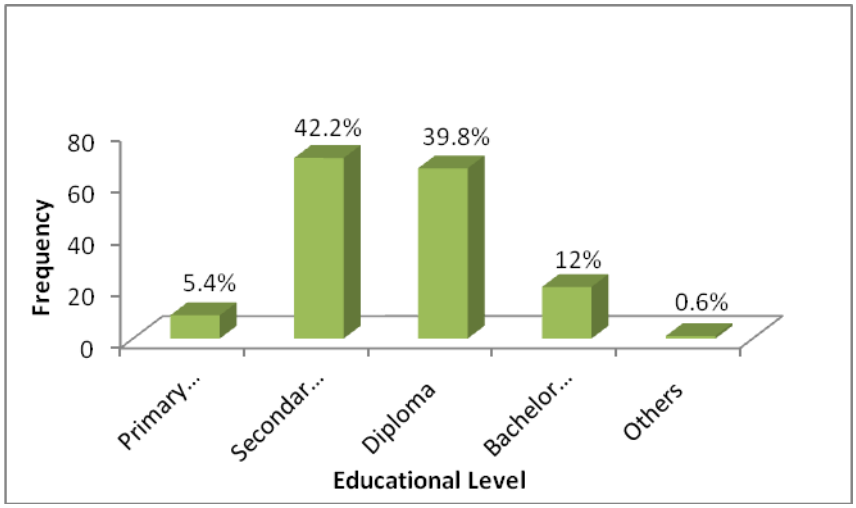

Figure 4.4: Educational Level

The firms' years of operation were divided into four groups; 10 years and above, 5 to 10 years, 1 to 5 years and less than 1 year. Figure 4.5 shows the majority of respondent firm years of operation is 1 to 5 years is 88 (53%), followed by 5 to 10 years is 44 (26.5%), Less than 1 year is 25 (15.1%), and 10 years and above is 9 (5.4%). This Figure 4.5 clearly shows that most of the SMEs in Johor are quite new in operating the business firm.

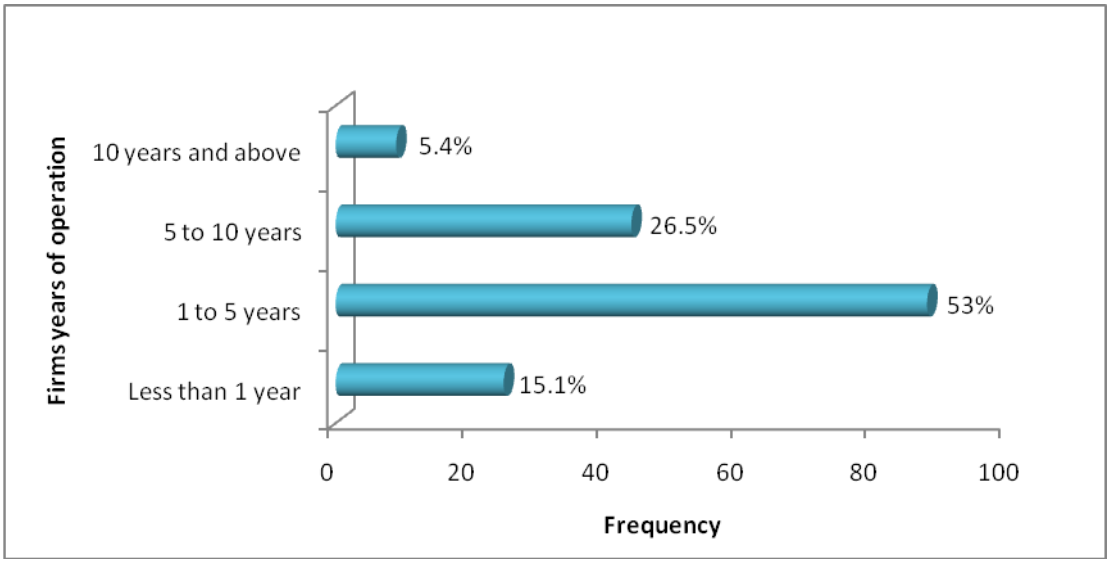

Figure 4.5: Firms Year of Operation

As shown in Figure 4.6, only three firms were adopted the IT for 10 years and above. about 42 firms adopted IT from 5 to 10 years. A majority of 88 companies adopted IT from 1 to 5 years. Another 31 firms adopted IT in less than 1 year while another 2 firms claimed to be not adopted at all. It can be concluded, that the SMEs owner are quite new in adopting IT.

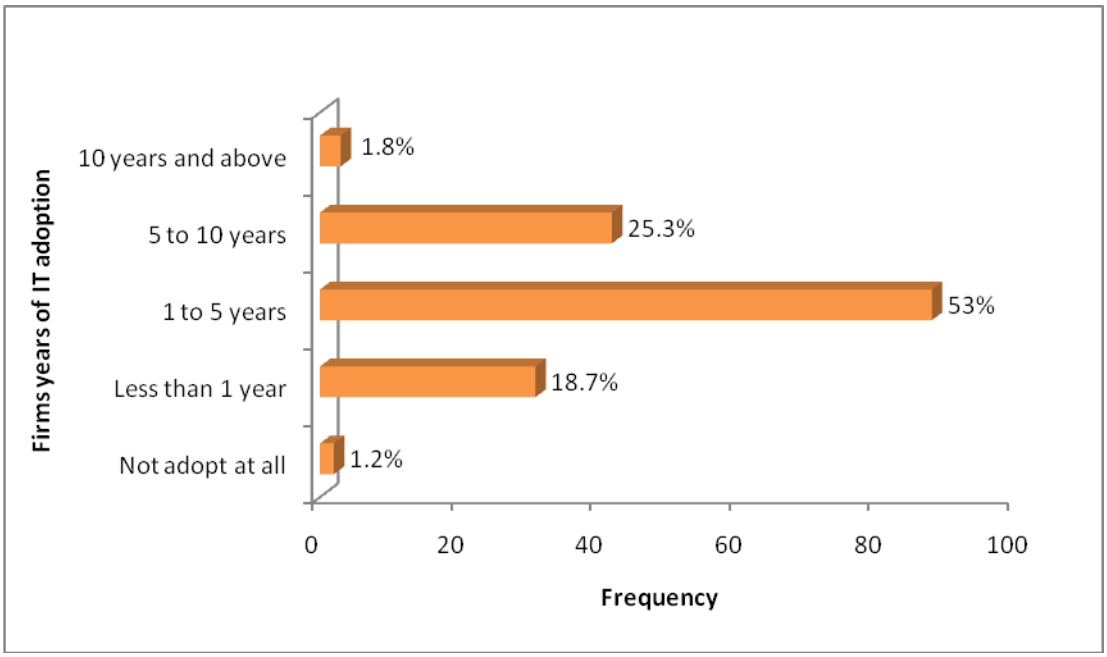

Figure 4.6: Firms Years of IT Adoption

4.4 LEVEL OF IT ADOPTION

In order to identify the level of IT adoption in SMEs, the mean value of each independent variables of IT adoption was calculated using SPSS. As mentioned in previous chapter, the independent variables in IT adoption are; IT Infrastructure, Strategic Alignment, Organizational Structure and Individual Learning.

Table 4.5 shows the average of IT infrastructure. There are 4 items (questions) in the IT Infrastructure variable. From the items, the mean computed for V1a (3.56),

V1b (3.52), V1c (3.60) and V1d (3.64) are then calculated to get the total average mean of the IT Infrastructure variable. The average for the IT Infrastructure is 3.58.

Table 4.5: Average of IT Infrastructure

IT Infrastructure Items	Mean
V1a) allocated a generous budget for purchasing IT hardware	3.56
V1b) allocated a generous budget for purchasing IT software	3.52
V1c) emphasized IT staffing and training	3.60
V1d) embraced sophisticated Internet applications	3.64
Average	**3.58**

Table 4.6 shows the average of Strategic Alignment. There are 4 items (questions) in the Strategic Alignment variable. From the items, the mean computed for V2a (3.23), V2b (3.18), V2c (3.20), and V2d (3.22) are then calculated to get the total average mean of the Strategic Alignment variable. The final average value for the Strategic Alignment is 3.21.

Table 4.6: Average of Strategic Alignment

Strategic Alignment Items	Mean
V2a) IT supported business strategies that strengthen customer service	3.23
V2b) IT implemented in compliance with business strategies	3.18
V2c) IT supported business strategies to improve process management	3.20
V2d) IT supported business strategies to improve product/ service offerings.	3.22
Average	**3.21**

Table 4.7 shows the average of Organizational Structure. For this variable, there are 5 items (questions). From the items, the mean computed for V3a (3.21), V3b (3.25), V3c (3.20), V3d (3.19) and V3e (3.20) are then calculated to get the average of Organizational Structure variable. The final value for Organizational is 3.21.

Table 4.7: Average of Organizational Structure

Organizational Structure Items	Mean
V3a) enhance employee empowerment	3.21
V3b) enable inter-department (cross-function) integration	3.25
V3c) adjusted for new business practices	3.20
V3d) increase operations mobility	3.19
V3e) help managers make more timely decisions	3.20
Average	**3.21**

The average for Individual Learning was shows in Figure 4.8. In this variable, there are also 5 items (questions) in total. From the items, the mean calculated for V4a (3.20), V4b (3.20), V4c (3.19), V4d (3.22) and V4e (2.88) are then computed to get the average of Individual Learning variable. The final value for Individual Learning is 3.13.

Table 4.8: Average of Individual Learning

Individual Learning Items	Mean
V4a) provided sufficient training	3.20
V4b) employees able to learn new IT application quickly	3.20
V4c) employees able to learn new IT applications for their work	3.19
V4d) employees able to innovate new ideas and work effectively	3.22
V4e) employee**s** shown resistance to adopting new IT systems and applications	2.88
Average	**3.13**

Table 4.9 shows the overall average of level of IT adoption. From the IT adoptions means tabulation above, the variables mean; IT Infrastructure (3.58), Strategic Alignment (3.21), Organization Structure (3.21) and Individual Learning (3.13) were totalled up and divided by 4 (4 variables). The final value of IT adoption mean is 3.2825. The value indicated that the SMEs owners are partially between the level of neutral and highly adopt the IT. It can be conclude that most of the SMEs owners in Johor were adopting IT in their firms.

Table 4.9: Average of IT adoption level

IT Adoption Variables	Mean
IT Infrastructure	3.58
Strategic Alignment	3.21
Organizational Structure	3.21
Individual Learning	3.13
Average	**3.2825**

4.5 FIRM PERFORMANCE LEVEL

This section aims to identify the SMEs firm's performance level after adopted IT in their firms there are 5 items of firms performance were evaluated by respondents. Table 4.10 shows the data tabulation for firm performance item in the SMEs. For clear understanding, the data from Table 4.10 was made into chart in Figure 4.7.

Table 4.10: Frequency Table of firm's performances by variables

Firm Performance	Mean
Improvement in Productivity	3.20
Sales Growth in Product Selling	3.20
Increasing in Profit	3.20
Create Product Innovation	3.19
Create Process Innovation	3.22
Average	**3.20**

Firm performance is the dependent variable for this study and it have 5 items in total which are; Improvement in Productivity, Sales Growth in Product Selling, Increasing in Profit, Create Product Innovation, and Create Process Innovation as shown in Table 4.10.

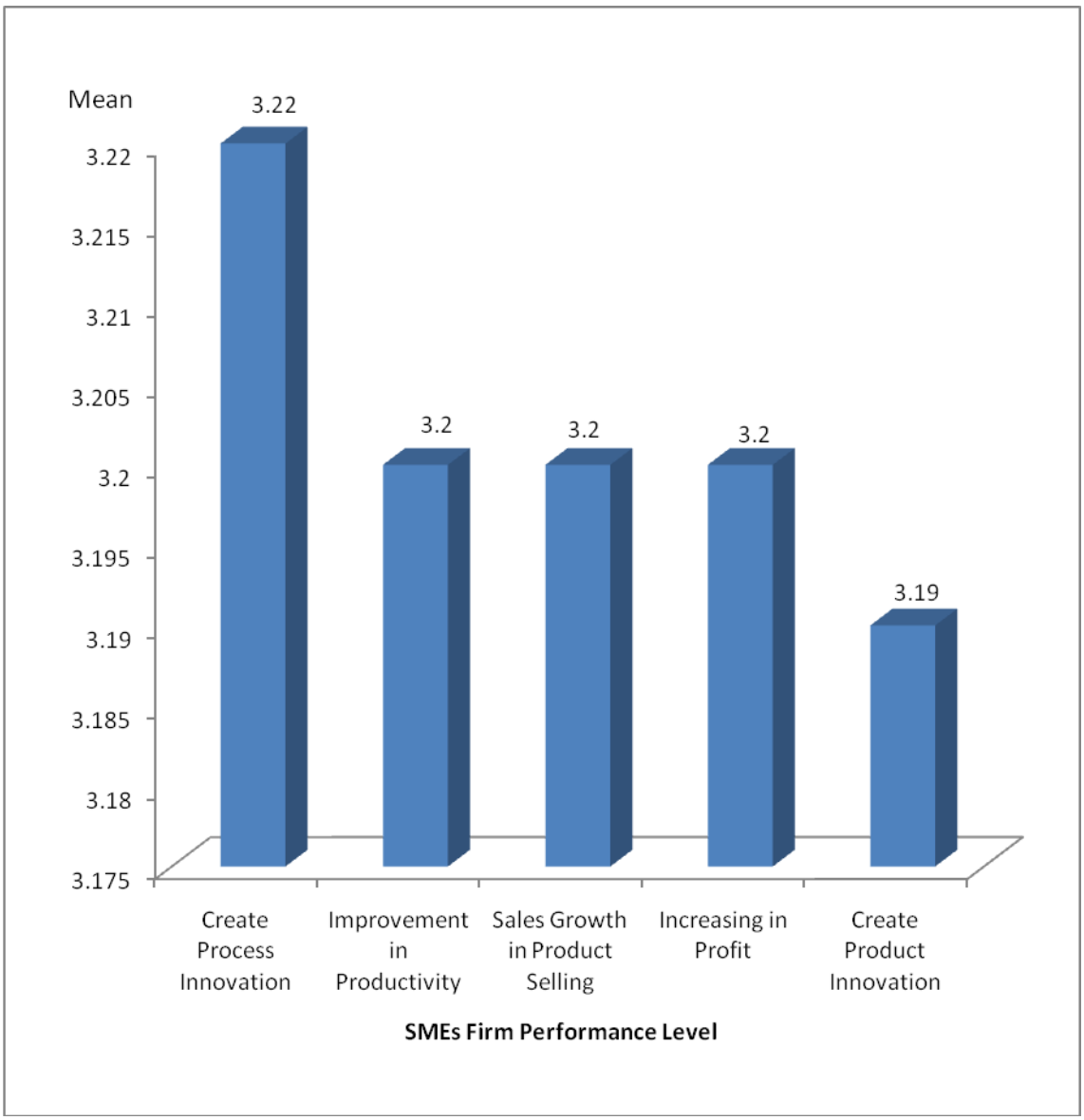

Figure 4.7: SMEs Firm Performance Level

From Figure 4.7, it shows that the majority of SMEs in Johor chose Create Process Innovation when adopting IT with the highest computed mean (3.22). Secondly chose by SMEs owners are Improvement in Productivity, Sales Growth in Product Selling and Increasing in Profit, the less chose by SMEs owners is Create Product Innovation, with value mean of 3.19. From this figure, it can be concluded that IT has biggest impact for SMEs to create the process innovation.

4.6 CORRELATION BETWEEN IT ADOPTION VARIABLES AND FIRM PERFORMANCE

The Pearson product-moment correlation coefficient or Pearson's correlation for short is a measure of the strength and direction of association that exist between two variables measured on at least an interval scale (Aczel and Sounderpandian, 2001). As for this study, the second objective is to identify and analyze the relationship between four IT adoption variables and SMEs firm performance. A Pearson's correlation attempt to draw a line of best fit through the data of two variables, and the Pearson correlation coefficient, r, indicate how far away all these data point are to this line of best fit (Farahanim et. al, 2012).

According to Garczynski (2013) the Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variables increase, so does the value of the other variables. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variables decreases.

Table 4.11 shows the Pearson's correlation between the four variables in IT adoption and firm performance. The results shows that all the variables involve have the positive value of correlation coefficient. As can be seen in Table 4 11 the "Strategic Alignment" have a strong positive correlation with "IT Infrastructure" with r value of 0.436. Similarly, "Organizational Structure" have strong positive correlation with "IT Infrastructure" (0.571) and "Strategic Alignment (0.678). While "Individual Learning" have a strong positive correlation with "IT Infrastructure" (0.468), "Strategic Alignment" (0.640) and "Organizational Structure" (0.605). Finally, "Firm Performance" have a strong positive correlation with "IT Infrastructure" (0.504),"Strategic Alignment" (0.733),"Organizational Structure" (0.766) and "Individual Learning (0.956).

From Table 4.11, it can be concluded that all 4 IT adoption variables; IT Infrastructure (v1), Strategic Alignment (v2), Organizational Structure (v3) and

Individual Learning (v4) have positive and correlation with firm performance. (dependent variable)

Table 4.11: Pearson Correlation Analysis on Four IT Adoption Variables and Firm Performance

Correlations

	v1	v2	v3	v4	Firm Performance
v1) IT Infrastructure	1				
v2) Strategic Alignment	.436**	1			
v3) Organizational Structure	.571**	.678**	1		
v4) Individual Learning	.468**	.640**	.605**	1	
dv) Firm Performance	.504**	.733**	.766**	.956**	1

**. Correlation is significant at the 0.01 level (2-tailed).

4.7 CONCLUSION

This section integrates all the information from proceeding sections and finally makes an overall assessment for the postal survey result and finding.

From the reliability analysis, the Cronbach's Alpha value indicated that the items in independent variables and dependent variables were in excellent internal consistency. From the Cronbach's Alpha value, it can be concluded that the questionnaires are reliable to be distributed.

The respondents demographic in section 4.3 concluded the descriptive analysis on the 166 respondents for this study, which are SMEs owners. The majority of

respondent responded to questionnaires are female. Majority age of the respondents is in range 20 to 30 years old. About 42% of the respondents are Malay. Most of the respondents only finished secondary school. Most of the SMEs owners are quite new in operating business firm (1 to 5 years) and most of them are quite new in adopting IT (1 to 5 years).

The section 4.4 presents the level of IT adoption among SMEs owners in Johor. The IT infrastructure is the most adopted by the SMEs owners among 4 other independent variables with the average value of 3.58. From the analysis, author calculated the means of overall items in IT adoption (independent variable). From the means computed, it concluded that IT infrastructure most of the SMEs owners in Johor were adopting IT in their firm with the total average mean of 3.28.

The section 4.5 shows the mean calculated for items in dependent variable. It aimed to find the firm performance level of SMEs in Johor by adopting IT. The Firm performance level was shown in mean (3.22) and it can be concluded that IT has biggest impact for SMEs to create the process innovation.

In section 4.6, correlation between IT adoption and firm performance was analyzed. The Pearson correlation analysis was executed in order to find the relationship between independent and dependent variable for this study. It can be concluded that there are positive and strong correlation within the IT adoption variable and between IT adoption and firm performance.

In the next chapter, overall conclusion for this study will be discussed. The limitation during conducting this study also will be discussed in the next chapter along with recommendation and studies contributions.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This chapter concludes all the findings from this study work presented in this thesis. It begins with the need for the study, followed by the research findings result. Finally, this chapter culminates with an outlines of recommendation for further research arising from this study.

5.2 RESEARCH FINDINGS

The purpose of this research is to study the adoption of IT by SMEs and its relationship with firm performance. This study was conducted to answer two researches questions as discussed in Chapter 1; firstly, to identify the level of SMEs owners' IT adoption and secondly, to analyze the relationship between SMEs owners' IT adoption and firm performance.

From the previous chapter, the reliability analysis was conducted to see whether the items used in the questionnaire was reliable and reasonable to be distribute to the respondents (SMEs owners) or vice versa. After the reliability analysis was conducted for both independent and dependent variables, the author discovered the high value of Cronbach's Alpha ranged between 0.941 and 0.957. This result proved that the questionnaire has high internal consistency and reliable to be distributed to respondents.

From the previous chapter, the analysis has been conducted to identify the level of SMEs owners' IT adoption. The mean value shows 3.28 for IT adoption level. As discussed in chapter 2, from their (SMEs owners') evaluation about SMEs firms' IT adoption, the SMEs level of IT adoption can be indentify. As for this study, the IT

adoption mean value (3.28) were ranged into 3 to 4 from 5 scale of Likert-scale. To relate to information system application and/or adoption, Van Akkeren and Cavaye (1999) classified small enterprises, into three groups: non-adopter; adopter; and full-adopter. Thus, the mean value 3.28 was considered adopter. As the conclusion, the SMEs owners in Johor mostly were an adopter of IT. This analysis answered the objective 1 in this study.

Meanwhile, in order to answer the second objective, the Pearson correlation analysis was conducted to find the correlation between IT adoption variables (IT Infrastructure, Strategic Alignment, Organizational Structure and Individual Learning) and firm performance. The result shows that all four variables used in IT adoption have positive correlation coefficient value with the firm performance. It concluded that the IT adoption have a positive relationship with the firm performance.

5.3 RESEARCH CONTRIBUTIONS

This field of study were hoped to contribute to future research on the same field of study or usefully used as future references.

This study will help SMEs owners to have a deeper understanding on the importance of IT adoption as it can affect the performance of their firm. Form this study, author hopes that more SMEs will increase the awareness on the IT adoption and able to integrate the IT in their firm operation. Subsequently, able to improve their firm performance.

To government agencies, this study hopes to contribute a form of encouragement to them to help more SMEs by providing funds for SMEs to improve their company. Government agencies can provide training, upgrading systems, acquisition of technology, consultation fees and electronics trading activities that related to IT learning skills and knowledge.

Author hopes this study also helping in the creation of general contribution for all area of study also as in creation of a new knowledge for academic areas of study. It is hoped that this study will inform the people out there about the importance of IT adoption in this presents time.

5.4 LIMITATIONS

Every studies or research has its own limitations before, during and after the study conducted. The same thing happened when conducting this study. The 180 respondents are picked randomly at first placed, but the questionnaires returns completely answered were 166 in total. Not all respondents have a time in answering the questionnaires, because of some factors that cannot be prevented from happening.

Most of the respondents, whose have a little time not all give fully commitment by answered the questionnaire frankly. For example, the Likert-scales question. The respondents preferred to answered "neutral" in almost questions given. That makes the data when tabulated in the SPSS are hard to interpreted, because the mean values are not low but not high too.

The time for conducting this research also one of the limitation factor. The time given in order to completing this thesis is almost 8 month or two semesters of lecture weeks. Still, the limited time are not very helpful for conducting research.

Due to lack of resources might contributes to the lack of information regarding IT adoption and firm performance. However, it can be concluded that there is limited researches out there, since this topic of research is quite new in business and technology industries.

5.5 RECOMMENDATION

For future study or research, it is recommended for those outside researchers to study more on this title. This is because SMEs is just a small business and it improvement and performance are easily often overlooked by researchers. The study on firm performance often conducted on biggest firm and company. The study involving SMEs should be taken seriously in all aspects, so the successful results can be obtained.

Furthermore, for future studies it is hope that the sample number of respondents increased, particularly in term of questionnaires distribution without focusing on particular population and scope. In addition, the researcher who intended to carry out the study in future should equipped himself/herself with the knowledge related to SMEs

so that will be able to provide useful information to the respondents before let them answer the survey questionnaires, thus the respondents will understands the questions asked in the questionnaires. In brief, the respondents should be provided clear explanation relating to IT adoption by SMEs and firm performance.

However, as the biggest nations' biggest player, government should play an important role in helping and developing SMEs business sector as it promotes the local products throughout Malaysia. The government should give a helping hand in terms of funds and training related to IT learning skill and knowledge for SMEs improvement in Malaysia.

5.6 CONCLUSION

This study conducted may have some limitations that may prevent the authenticity of the results obtained. However, this study conducted has achieved stated objectives. The present work has hopefully been able to enrich the existing body of knowledge as regards to IT adoption in SMEs firm.

REFERENCES

Aczel, A.D. and Sounderpandian, J. 2001. Complete Business Statistics. 5th edition. Chicago: Irwin/ McGraw-Hill.

Agarwal, R. and Prasad, J. 1998. *Information System Research.* (online). http://isr.journal.informs.org/content/9/2/204.short (26 February 2013).

Akkeren, V.J. and Cavaye, A.L.M. 1999. Factors Affecting Entry-Level Internet Technology Adoption by Small Business in Australia: An Empirical Study. Proceedings 10th Australasian Conference on Information Systems.

Babbie, E. 2001. The Practice of Social Research. 9th ed. Belmont, CA: Wadsworth Thomson.

Barrett, F. 1995. Create appreciative learning culture. *Organizational Dynamics*. **24**(2): 36-49.

Best, J. and Khan, J. 1989. Research in Education. Englewood Cliffs (NJ): Prentice Hall

Bharadwaj, A.S. 2000. A Resource-based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *Minformation systems Quarterly*. **24**(1): 169-196.

Bingi, P., Mir, A. and Khamalah, T. 2000. The Challenges Facing Global E-commerce. *Information Systems Management.* **17**(4): 26-34.

Bitler, M.P. (2001). Small Businesses and Computers: Adoption and Performance. (online). http://www.frbsf.org/publications/economics/papers/2001/ (26 February 2013).

Blaxter, L., Hughes, C. and Tight, M. 1996. How to Research. Buckingham: Open University Press

Bloch, M. Pigneur, Y. & Segev, A. 1996. On the road of electronic commerce – a business value framework, gaining competitive advantage and some research issues. (online). www.stern.nvu.edu/mbloch/docs/roadtoec/ec.htm (20 May 2013)

Brynjolfsson, E. and Hitt L.M. 2000. Beyond Computation: Information Technology, Organizational Technology, Organizational Transportation and Business Performance. *Journal of Economic Perspectives*. **14**(4): 23-48.

Burns, R. 2000. Introduction to Research Method. London, Sage.

Butler, J.G. 2012. *A History of Information Technology and Systems*. University of Arizona. August: 2012.

Chan, Y.E., Huff, S.L., Barclay, D.W. and Copeland, D.G. 1997. Business strategic orientation, information system strategic orientation and strategic alignment. *Information Systems Research*. **8**(2): 125-150.

Chandler, D. and Munday, R. 2002. Information Technology. *A Dictionary of Media and Communication*. 1st edition. Oxford University Press.

Checkland, P. 1991. From Framework through experience to learning: The essential nature of action Research. *Information Systems Research: Contemporary Approaches and Emergent Traditions*. pp. 397-403. North-Holland: Amsterdam

Chen, J.S. and Tsou, H.T. 2007. Information Technology Adoption for Service Innovation Practices and Competitive Advantage: The Case of Financial Firms. *Department of Business Administration.* Thesis. University of Chung Li, Taiwan.

Chonko, L.B., Dubinsky, A.J., Jones, E. and Roberts, J.A. 2003. Organizational and Individual Learning in the Sales Force: An Agenda for Sales Research. *Journal of Business Research*. **56**(12): 935-946.

Combs, J.G., Crook, T.R., and Shook, C.L. 2005. The dimension of organizational performance and its implications for strategic management research. In Ketchen, D.J. and Bergh, D.D. (Eds.). *Research Methodology in Strategy and Management.* pp. 259-286. San Diego: Elsevier.

Cortina, J. 1993. What is coefficient alpha: an examination of theory and applications. *Journal of applied Psychology*. **78**:98-104

Crawford, I.M. 1990. Marketing Research, Centre and Network for Agricultural Marketing Training in Eastern and Southern Africa. Harare, Zimbabwe. pp. 36-48.

Crook, T.R., Ketchen, D.J., Jr., Combs, J.G., and Todd, S.J. 2008. Strategic Resources and Performance: A meta-analysis. *Strategic Management Journal.* **29**(11): 1141-1154.

Cronbach Alpha using SPSS. https://statistics.laerd.com/spss-tutorials/cronbachs-alpha-using-spss-statistics.php (13 May 2013).

Cronbach, L.J. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika*. **16**(3): 297-334

Daintith, J. 2009. IT. *A Dictionary of Physics.* 6th edition. Oxford University Press.

Daniel, E., and Wilson, H. 2002. Adoption intention and benefits realized: A study of e-commerce in UK SMEs. *Journal of Small Business and Enterprise Development*. **9**(4): 331-348.

Dasgupta, S. 2000. Information Technology Adoption in the Greek banking industry. *Journal of Global Information Technology Management.* **3**(3): 22-30.

Davenport, T., Hammer, M. and Metsisto, T. 1989. How Executives can Shape Their Companies' Information Systems. *Harvard Business Review*. **67**(5): 130-134.

Dewan, S., Michael, S.C. and Min, C. 1998. Firm Characteristics and Investments in Information Technology: Scale and Scope Effects. *Information Systems Research*. **9**(3): 219-232.

Dewett, T. and Jones, G.R. 2001. The role of information technology in the organization: a review, model and assessment. *Journal of Management*. **27**(3): 313-346.

Dimara, S. and Skuras, D. 2003. *Agricultural Economic*. **28**(3): 187-196

EPU. (2006). Ninth Malaysia Plan 2006-2010. P. M. s. Department, The Economic Planning Unit (EPU): pp. 1-559.

Farahanim, M., Noryanti, M., Nor Hafizah, M., Roslinazairimah, Z., Siti Roslinda, Y., and Siti Zanariah, S. 2012. Applied Statistics Module for Scientists and Engineers. 2nd edition. University Malaysia Pahang.

Flippo, E.B. 1966. *Management: A Behavioral Approach*. Boston, MA: Allyn and Bacon.

Fraenkel, J. and Wallen, N. 1996. *How to design and evaluate research in education.* New York: McGraw-Hill

Fruhling, A.L. and Digman, L. 2000. The impact of electronic commerce on business level strategies. *Journal of electronic commerce research.* 1(1). (online). http://www.csulb.edu/web/journals/jecr/issues/20001/paper2.htm (30 May 2013).

Garczynski, J. 2013. Albert S. Library's Help Guides/Albert S. Cook Library. (online). http://cooklibrary.towson.edu/helpguides/index.cfm?id=99

George, D. and Mallery, P. 2003. SPSS for Windows step by step: A Simple guide and reference. 11.0 update (4th ed.). Boston: Allyn & Bacon.

Glick, W.H., Washburn, N.T., and Miller, C.C. 2005. The Myth of Firm Performance. *Proceedings of the Annual Meeting of American Academy of Management*. Honolulu, Hawaii.

Green, S., Lissitz, R. and Mulaik, S. 2003. Limitation of coefficient alpha as an index of test unidimensionality. Educational Psychologycal Measurement.

Grover, V. and Goslar, M.D. 1993. The Initiation, Adoption and Implementation of Telecommunications Technologies in US Organisations. *Journal of Management Information System*. **10**(1): 141-163.

Grover, V., Fiedler, K.D. and Teng, J.T.C. 1999. The Role of Organizational and Information Technology Antecedents in Reengineering Initiation Behavior. *Decision Sciences*. **30**(3): 749-781.

Heldman, D.R and Hartel, R.W. 1997. *Principles of Food Processing*. NY: Chapman & Hall.

Henderson, J.C and Venkatraman, N. 1993. Strategic Alignment: Leveraging Information technology for transforming organization. *IBM Systems Journal*. **32**(1): 472-484.

Hitt, L. 1999. Information Technology and Firm Boundaries: Evidence from Panel Data. *Information Systems Research.* **10**(2): 134-149.

Hu, J. 1998. Customer Information Quality and Knowledge Management: A Case Study using Knowledge Cockpit. *J Knowledge Management*. **1**: 225-236.

Ibrahim, N. 2012. Primary and Secondary Data. (online). http://www.slideshare.net/hezel3210/primary-secondary-data#btnNext, (11 May 2013)

Jacquemin, A.P. and Berry, C.P. 1979. Entropy Measure of Diversification and Corporate Growth. *Journal of Industrial Economics.* **27**(4): 359-369.

Junaidah, H. 2007. Information Communication Technology (ICT) Adoption Among SME Owners in Malaysia. **2**(2). December: 2007.

Karkoviata, L. 2001. SMEs reluctant to go online. *Asian Business.* **37**(4): 75-76.

Kettinger, J. 1994. National Infrastructure Diffusion and the U.S. Information Super Highway. *Information and Management, Amsterdam*. **27**(6): 357-369.

Khairul, A.A. and Ahmad, M. 2005. Adoption of Web Site and e-commerce Technology among Malaysian public companies. *Industrial Management & Data Systems*. **105**(9): 1172-1187.

Kline, P. 1999. The Handbook of Psychological Testing. (2nd Ed.). London: Routledge

Lai, F., and Hsieh, C.T. 2007. On network external, e-business adoption and information asymmetry. *Industrial Management & Data Systems.* **107**(5): 728-746.

Lim, T.M. 2006. Outsourcing to Ensure Successful ICT Systems Implementation and Maintenance.

Malaysia. 2005. SME performances and statistics. *Census on Establishments and Enterprises 2005, Department of Statistic, Malaysia*.

Malaysia. 2011. *Economic Census 2011, Department of Statistics, Malaysia.*

McColl, J.H. and Easton, V.J. 2007. Statistic Glossary. http://www.stats.gla.ac.uk/steps/glossary/paired_data.html#ppmcorrcoeff. (12 May 2013)

Mintzberg, H. 1979. *The structuring of organizations*. Englewood Cliffs, NJ: Prentice Hall.

MITI. 2006. *Malaysia International Trade and Industry Report 2006.* Kuala Lumpur

MITI, 2009. *Malaysia International Trade and Industry Report 2008*. Kuala Lumpur.

Mohannak, K. 2007. Innovation Networks and Capability Building in the Australian high-technology SMEs. *European Journal of Innovation Management*. **10**(2): 236-251.

Morton, M.S. 1995. *The Corporations of the 1990s*. New York, NY: Oxford University Press.

Myers, B, Kappelman, L., and Prybutok, V. 1997. A Comprehensive Model for Assessing the Quality and Productivity of the Information Systems Function: Toward a Theory for Information Systems Assessment. *Information Resources Management Journal*. **10**(1): 6-25.

Palmer, J.W. and Markus, L.M. 2000. The performance impacts of quick response and strategic alignment in specialty retailing. *Information System Research*. **11**(3): 241-259.

Payne D.A. and McMorris R.F. 1967. *English Book*. pp. 419. Waltham, Massachussets: Blaisdell Pub. Co.

Porrass, J.I. and Robertson, P.J. (1992). Organizational Development: Theory, Practice and Research. In M. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology*. Palo Alto: Consulting Psychologist Press.

Porter, M.E. (2001). Strategy and Internet. *Harvard Business Review*. **79**(3):63-78

Proctor, K.S. 2011. *Optimizing and Assessing Information Technology: Improving Business Project Execution*. New York: John Wiley and Sons.

Punch, K. 1998. Introduction to Social research: Quantitative and Qualitative Approaches. London, Sage.

Reich, B.H. and Benbasat, I. 1996. Measuring the Linkage between Business and Information Technology Objectives. *Minformation systems Quarterly*. **20**(1): 55-81.

Richard, P.J., Devinney, T.M., Yip, G.S., and Johnson, G. 2009. Measuring Organizational Performance: Towards Methodological Best Practice. *Journal of Management.* **35**(3): 718-804.

Salleh, A.S. and Ndubisi, N.O. 2006. An Evaluation of SME Development in Malaysia. *International Review of Business Research Papers*. **2**(1): 1-14. http://www.geasiapacifico.org/documents/IBRP1.pdf (27 February 2013).

Santos, J.B and Brito, L.A.L. 2012. *Toward a Subjective Measurement Model for Firm Performance.* Rio de Janeiro, Brazil.

Scupola, A. 2003. The adoption of Internet commerce by SMEs in the south of Italy: An environmental, technological and organizational perspective. *Journal of Global Information Technology Management.* **6**(1): 3-18.

Senn, J.A. and Lee J.W. 1995. The Impact of IT Spending for Staff Development on Performance of the Firm.

Shaukat, M. and Zafarullah, M. 2010. Impact of IT on Organizational Performance: an Analysis of Quantitative performance Indicator of Pakistan's Banking and Manufacturing Companies. *International Research Journal of Finance and Economics*. **39**.

Shin N. 2006. The impact of (IT) on the performance of diversified firms. *Decision Support Systems.* **41**(4): 698–707 Economics and Information Systems.

Sircar, S., Turnbow, J.L. and Bordoloi, B. 2000. A Frame Work for Assessing the Relationship between Information Technology Investments and Firm Performance. *Journal of Management Information Systems*. **16**(4): 69-97.

SME Corp. 2011. Malaysia: Small and Medium Enterprises Corporation Malaysia

SMIDEC. 2009a. *SMIDEC 2008 Annual Report*. Kuala Lumpur: Small and Medium Industries Development Corporation.

Smith, E.A. 2001. The Role of Tacit and Explicit Knowledge Management. **5**: 311-321

Stoneman, P.L. and David, P.A. 1986. Adoption Subsidies versus Information Provision as Instruments of Technology Policy. *Economic Journal, Royal Economic Society*. **96**(380a): 142-50.

Sudman, S. and Bradburn, N.M. 1973. *Asking Questions.* pp. 208-28.

Suhaiza, Z., Hong K.O and Suhaimi S. 2006. The adoption of (ICT) for effective Knowledge Management in SMEs in Malaysia. *Asian Journal of Information Technology.* **5**(1). 28-33.

Syed Shah A. 2009. Adoption of internet in Malaysian SMEs. *Journal of Small Business and Enterprise Development*. **16**(2): 240 – 255.

Syed Shah A. and Mohd. Kamal M.N. 2009. ICT Adoption in Small and Medium Enterprises: an Empirical Evidence of Service Sectors in Malaysia. *International Journal of Business and Management*. **4**(2). February: 2009.

Syed Syah, A. and Nilufar A. 2007. ICT Adoption in Malaysian SMEs from Services Sectors: Preliminary Findings. *Journal of Internet Banking and Commerce, December 2007*.**12**(3) (online). http://www.arraydev.com/commerce/jibc/ (3 March 2013).

Tan, C. 2006. Towards Progress. *Computerworld Malaysia*, July: 2006.

Tan, M. 1998. Creating the digital economy: perspectives from Singapore, Electronic Commerce in the Information Society. *Proceedings from the 11th International Bled Electronic Commerce Conference, Bled, Slovenia*. June: 8-10.

Toto S., Euphrasia S.S. and Budi H. 2010. Information Technology and Business Performance: A Case Study on Small Food Processing Firms. *Journal Of Global Business Administration.***2**(1). March: 2010.

Van Akkeren, J.K and Cavaye, A.L.M. 1999. Factor affecting entry-level internet technology adoption by small business in Australia- evidence from three cases. *Journal of Systems and Information Technology.* **3**(2):33-48.

Venkatraman, N. and Ramanujam, V. 1986. Measurement of Business Performance in Strategy Research: A Comparison of Approaches. *Academy of Management Review.* **1**(4): 801-814.

Venkatraman, N. 1989. Strategic Orientation of Business Enterprise: The Construct, Dimensionality and Measurement. *Management Science*. **35**(8): 942-962.

Walonick, D.S. 1997. A Selection from Survival Statictic: 1997-2010. Bloomington, MN: StatPac, Inc.

Wang, J.C. and Tsai, K.H. 2002. *Factors in Taiwanese Firms' Decisions to Adopt Electronic Commerce: An Empirical Study*. UK: Blackwell Publishers Ltd.

Wang, S.D. 2003. *The Development of E-Financing: Implications for SMEs*. Manhattan.

Zahra, S.A. and George, G. 2002. Absorptive Capacity: A Review, Reconceptualization and Extension. *Academy of Management Review*. **27**(2): 185-203.

Zaltman, G., Duncan, R. and Holbek, J. 1973. *Innovation and organizations*. New York, NY: Wiley.

Zhang, W.Y and Kwok, E. 2003. Quantitative Data Analysis (Intermediate). (online). https://www.google.com.my/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0CEUQFjAD&url=http%3A%2F%2Fwww.ouhk.edu.hk%2FCRIDAL%2Fworkshops%2FSessionTwo2003.doc&ei=pPmQUZPZH8r9rAeti4HwAQ&usg=AFQjCNEBQL8YKtgj5z2iJqSqAMx9X-MeXQ&sig2=VL4kASDleLyVBPriZZxBlg&bvm=bv.46340616,d.bmk&cad=rja (13 May 2013).

APPENDIX A

THE STUDY ON IMPLEMENTATION OF INFORMATION TECHNOLOGY AND ITS RELATIONSHIP WITH FIRM PERFORMANCE

Dear Respondent,

This study is primarily about implementation of Information Technology (IT) and its relationship with firm performance. This questionnaire was design to identify the SMEs owner's perception on IT adoption and to examine the relationship between IT adoption and firm performance. For your further understanding, IT defined as application of computer and telecommunications equipment to store, process, retrieved, transmit, manipulate data and protect information. Your kind feedback would be useful for me to obtain a clear understanding and better information in accomplishing this study. Your response to this survey is very valuable and greatly appreciated, since the success of this study depends very much on contribution.

This study is carried out to fulfil the requirement of Final Year Project as a student who attend bachelor degree in Industrial Technology Management in Universiti Malaysia Pahang.

For your knowledge, any information about your company or firm will be keep confidential in this study. It is very grateful if you could spend a little time to respond to this questionnaire. For further information, kindly contact me:

Phone no.: 013-7574126
Email: ellezaabdullah@yahoo.com

Thanking you in advance for your valuable time.

Sincerely,

_____

Noor Elleza Aqila bt Abdullah
Degree Student
UNIVERSITI MALAYSIA PAHANG

Instruction: **Dear Respondent; you must be the firm's owner or firm's representative to answer this questionnaire. Kindly respond to all questions in this questionnaire. Thank you.**

SECTION A: GENERAL BACKGROUND

Instruction: Please tick ☒ in the box below.

1. Gender : ☐ Male ☐ Female

2. Age : ☐ 20 to 30 ☐ 30 to 40 ☐ 40 and above

3. Race : ☐ Malay ☐ Indian ☐ Chinese ☐ Others

4. Education level :
   - ☐ Primary School
   - ☐ Secondary School
   - ☐ Diploma
   - ☐ Bachelor Degree
   - ☐ Master Degree
   - ☐ PHD

5. Firm years of operation:
   - ☐ Less than 1 year
   - ☐ 1 to 5 years
   - ☐ 5 to 10 years
   - ☐ 10 years and above

6. Firm year(s) of IT Adoption:
   - ☐ Not adopt at all
   - ☐ Less than 1 year
   - ☐ 1 to 5 years
   - ☐ 5 to 10 years
   - ☐ 10 years and above

SECTION B: IT ADOPTION LEVEL

Instruction: This section is to evaluate your firms' level of IT adoption according to your evaluation about your company. Kindly circle one number for each statement.

For references, number 1 to 5 indicates as:

1 Very Low	2 Low	3 Neutral	4 High	5 Very High

IT ADOPTION VARIABLES	Level of Adoption
V1: IT INFRASTRUCTURE	
For the past few years our company	
a) has allocated a generous budget for purchasing IT hardware	1 2 3 4 5
b) has allocated a generous budget for purchasing IT software	1 2 3 4 5
c) has emphasized IT staffing and training	1 2 3 4 5
d) has embraced sophisticated Internet applications	1 2 3 4 5
V2: STRATEGIC ALIGNMENT	
For the past few years,	
a) our IT capability has supported business strategies that strengthen customer service	1 2 3 4 5
b) our IT projects has been implemented in compliance with business strategies.	1 2 3 4 5
c) our IT application have supported business strategies to improve process management	1 2 3 4 5
d) our IT application have supported business strategies to improve product/ service offerings.	1 2 3 4 5
V3: ORGANIZATIONAL STRUCTURE	
For the past few years, our organizational structure, by adopting new information technology systems and applications,	
a) has been changed to enhance employee empowerment	1 2 3 4 5
b) has been changed to enable inter-department (cross-function) integration	1 2 3 4 5
c) has been adjusted for new business practices	1 2 3 4 5
d) has been changed to increase operations mobility	1 2 3 4 5
e) has been changed to help managers make more timely decisions	1 2 3 4 5
V4: INDIVIDUAL LEARNING	
For the past few years,	
a) our company has provided sufficient training while implementing new IT systems and applications	1 2 3 4 5
b) our employees have been able to learn new IT application quickly	1 2 3 4 5
c) our employees have been able to learn new IT applications for their work	1 2 3 4 5
d) our employees have been able to innovate new ideas and approaches to work effectively by adopting new IT applications	1 2 3 4 5
e) our employee**s** have shown a little resistance to adopting new Information systems and applications	1 2 3 4 5

SECTION C: FIRM PERFORMANCE

Instruction: The purpose of this section is to identify more about your firm performance. Kindly circle one number for each statement.

For references, no 1 to 5 indicates as:

1 Very Low	2 Low	3 Neutral	4 High	5 Very High

Firm Performance	Performance Level
For the past few years our company has / experienced	
a) improvement in productivity	1 2 3 4 5
b) sales growth in product selling	1 2 3 4 5
c) increasing in profit	1 2 3 4 5
d) create products innovation	1 2 3 4 5
e) create process innovation	1 2 3 4 5

~Thank for your valuable time~

KAJIAN PELAKSANAAN TEKNOLOGI MAKLUMAT (IT) DAN HUBUNGKAIT TERHADAP PRESTASI SYARIKAT

Tuan/Puan,

Kajian ini adalah mengenai pelaksanaan Teknologi Maklumat (IT) dan hubungannya dengan prestasi syarikat. Soal selidik ini dilakukan untuk mengenal pasti persepsi pemilik syarikat terhadap penggunaan IT dan untuk mengkaji hubungan antara penggunaan IT dan prestasi syarikat. Untuk pemahaman lanjut, IT ditakrifkan sebagai penggunaan peralatan komputer dan telekomunikasi untuk menyimpan, memproses, menghantar, memanipulasi data serta melindungi maklumat. Maklumat yang diberikan syarikat tuan/puan akan membantu saya dalam mendapatkan maklumat yang lebih baik dan jelas dalam melaksanakan kajian ini. Respon anda terhadap soal selidik ini adalah sangat bernilai dan berharga kerana kejayaan kajian ini bergantung sepenuhnya terhadap sumbangan yang anda berikan.

Kajian ini dilakukan untuk memenuhi kehendak Projek Tahun Akhir sebagai pelajar yang mengambil sarjana muda dalam jurusan Pengurusan Teknologi Industri di Universiti Malaysia Pahang.

Untuk pengetahuan pihak tuan/puan, sebarang maklumat berkaitan syarikat pihak tuan/puan akan dirahsiakan. Setinggi penghargaan daripada saya sekiranya pihak tuan/puan dapat meluangkan sedikit masa untuk menjawab soal selidik ini. Sila hubungi saya untuk sebarang pertanyaan:

No. Telefon: 013- 7574126
Email: ellezaabdullah@yahoo.com

Terima kasih atas sedikit masa yang anda berikan.

Yang benar,

_____

Noor Elleza Aqila bt Abdullah
Pelajar Sarjana Muda
UNIVERSITY MALAYSIA PAHANG

Instruction: **Tuan/Puan; anda mestilah pemilik syarikat ataupun wakil kepada pemilik syarikat untuk menjawab borang soal selidik ini. Sila respon kepada semua soalan didalam borang soal selidik ini. Terima kasih.**

SEKSYEN A: LATAR BELAKANG UMUM

Arahan: Sila tandakan ☒ pada kotak dibawah.

1. Jantina : ☐ Lelaki ☐ Perempuan

2. Umur : ☐ 20 - 30 ☐ 30 - 40 ☐ 40 dan keatas

3. Bangsa : ☐ Melayu ☐ India ☐ China ☐ Lain-lain

4. Tahap pendidikan :
   - ☐ Sekolah Rendah
   - ☐ Sekolah Menengah
   - ☐ Diploma
   - ☐ Sarjana Muda
   - ☐ Master
   - ☐ PHD

5. Tahun syarikat anda beroperasi:
   - ☐ Kurang dari setahun
   - ☐ 1 – 5 tahun
   - ☐ 5 – 10 tahun
   - ☐ 10 tahun keatas

6. Tahun melaksanakan penggunaan IT di syarikat:
   - ☐ Tidak melaksanakan langsung
   - ☐ Kurang dari setahun
   - ☐ 1 - 5 tahun
   - ☐ 5 - 10 tahun
   - ☐ 10 years and above
   - ☐ Lain-lain, sila nyatakan: _____

SEKSYEN B: TAHAP PENGGUNAAN IT

Arahan: Seksyen ini bertujuan menilai tahap penggunaan IT di syarikat anda. Sila bulatkan satu nombor sahaja bagi setiap pernyataan.

Sebagai rujukan, nombor 1 hingga 5 mewakili:

1 Sangat Rendah	2 Rendah	3 Neutral	4 Tinggi	5 Sangat Tinggi

PEMBOLEHUBAH PENGGUNAAN IT	Tahap Penggunaan
V1: INFRASTRUKTUR IT	
Beberapa tahun lepas, syarikat saya	
a) Telah memperuntukkan bajet untuk membeli perkakasan IT (hardware)	1 2 3 4 5
b) Telah memperuntukkan bajet untuk membeli software IT (software)	1 2 3 4 5
c) Telah menekankan kakitangan IT dan latihan untuk IT (Staffing & Training)	1 2 3 4 5
d) Telah mengamalkan aplikasi internet yang canggih	1 2 3 4 5
V2: PENJAJARAN STRATEGIK	
Beberapa tahun lepas,	
a) Keupayaan IT kami telah menyokong strategi perniagaan yang mengukuhkan perkhidmatan pelanggan.	1 2 3 4 5
b) Projek-projek IT kami telah dilaksanakan selaras dengan strategi perniagaan.	1 2 3 4 5
c) Aplikasi IT kami telah menyokong strategi perniagaan untuk meningkatkan proses pengurusan.	1 2 3 4 5
d) Aplikasi IT kami telah menyokong strategi perniagaan untuk meningkatkan penawaran produk/perkhidmatan.	1 2 3 4 5
V3: STRUKTUR ORGANISASI	
Untuk beberapa tahun kebelakangan ini,struktur organisasi kami, dengan menggunakan system teknologi maklumat dan aplikasi baru,	
a) Telah berubah untuk meningkatkan pengupayaan pekerja	1 2 3 4 5
b) Telah berubah untuk membolehkan integrasi antara jabatan. (cross-function integration)	1 2 3 4 5
c) Telah diselaraskan untuk amalan perniagaan yang baru	1 2 3 4 5
d) Telah ditukar kepada meningkatkan pergerakan operasi	1 2 3 4 5
e) Telah ditukar untuk membantu pengurus membuat keputusan yang lebih tepat pada masanya.	1 2 3 4 5
V4: PEMBELAJARAN SECARA INDIVIDUAL	
Untuk beberapa tahun kebelakangan ini,	
a) Syarikat kami telah menyediakan latihan yang mencukupi semasa melaksanakan system dan aplikasi IT baru.	1 2 3 4 5
b) Pekerja kami telah dapat mempelajari penggunaan IT baru dengan cepat	1 2 3 4 5
c) Pekerja kami telah dapat mempelajari aplikasi IT yang baru dalam kerja-kerja mereka	1 2 3 4 5
d) Pekerja kami telah mendapat idea inovasi dan pendekatan baru untuk bekerja secara berkesan dengan menggunakan aplikasi IT yang baru.	1 2 3 4 5
e) Kakitangan kami telah menunjukkan sedikit penentangan untuk menggunakan system maklumat dan aplikasi baru.	1 2 3 4 5

SEKSYEN C: PRESTASI SYARIKAT

Arahan: Seksyen ini bertujuan untuk lebih mengenalpasti tentang keadaan syarikat anda. Sila bulatkan satu nombor bagi setiap ayat.

Sebagai rujukan, nombor 1 hingga 5 mewakili:

1 Sangat Rendah	2 Rendah	3 Neutral	4 Tinggi	5 Sangat Tinggi

Prestasi Syarikat	Tahap Peningkatan
Beberapa tahun lepas, syarikat kami telah / mengalami	
a) Peningkatan dalam produktiviti	1 2 3 4 5
b) Pertumbuhan dalam penjualan produk	1 2 3 4 5
c) Peningkatan dalam keuntungan	1 2 3 4 5
d) Mewujudkan produk inovasi	1 2 3 4 5
e) Mewujudkan proses inovasi	1 2 3 4 5

~Terima kasih atas masa yang diberikan.~

APPENDIX B

GANTT CHART FOR FYP 1

CHAPTER	WEEK													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Identify research issues														
Deciding the topic and research objectives														
Approval of topic and research objectives														
Preparation of project research proposal														
Chapter 1														
Introduction														
Problem background														
Problem statement														
Objective of study														
Research questions														
Expected result														
Significance of study														
Scope of study														
Theoretical framework														
Operational definition														
Chapter 2														
Literature review														
Chapter 3														
Research methodology														
Submit draf proposal														
Submit proposal														
Presentation														

GANTT CHART FOR FYP 2

CHAPTER	WEEK													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Data collected during July & August 2013														
Chapter 4														
Introduction														
Reliability Analysis														
Respondent Demographic														
Level of IT Adoption														
Firm Performance Level														
Correlation between IT adoption & Firm Performance														
Chapter 5														
Introduction														
Research Findings														
Research Contributions														
Limitations														
Recommendation														
Submit draft Report														
Submit Report														
Presentation														

APPENDIX C

SAMPLE AND POPULATION TABLE

HANDOUT #16 Accreditation Study Course 2003
Universal Accreditation Board

Table for Determining Random Sample Size from a Given Population

(Confidence level 95%; Margin of error + or - 5%)

Population N	Sample S	N	S	N	S
10	10	220	140	1,200	291
15	14	230	144	1,300	297
20	19	240	148	1,400	302
25	24	250	152	1,500	308
30	28	260	155	1,600	310
35	32	270	159	1,700	313
40	36	280	162	1,800	317
45	40	290	165	1,900	320
50	44	300	169	2,000	322
55	48	320	175	2,200	327
60	52	340	181	2,400	331
65	56	360	186	2,600	335
70	59	380	191	2,800	338
75	63	400	196	3,000	341
80	66	420	201	3,500	346
85	70	440	205	4,000	351
90	73	460	210	4,500	354
95	76	480	214	5,000	357
100	80	500	217	6,000	361
110	86	550	226	7,000	364
120	92	600	234	8,000	367
130	97	650	242	9,000	368
140	103	700	248	10,000	370
150	108	750	254	15,000	375
160	113	800	260	20,000	377
170	118	850	265	30,000	379
180	123	900	269	40,000	380
190	127	950	274	50,000	381
200	132	1,000	278	75,000	382
210	136	1,100	285	100,000	**384**
				1,000,000	**384**
				10,000,000	**384**

NOTE: - Opinion surveys of the entire United States
Frequently consist of 1500 to 2000 interviews,
to permit valid information for subgroups
such as geographic regions, age, gender, and income.
In a state of 3,000,000 population, surveys often
involve a sample of 500 to 600, to permit breakouts.

Source: Adapted from Educational and Psychological Measurement
David A Payne; Robert F McMorris 1967 English Book x, 419 p. illus. 23 cm.
Waltham,Mass., Blaisdell Pub. Co.

APPENDIX D

CRONBACH's ALPHA INTERNAL CONSISTENCY VALUE

Cronbach's alpha	Internal consistency
$\alpha \geq .9$	Excellent
$.9 > \alpha \geq .8$	Good
$.8 > \alpha \geq .7$	Acceptable
$.7 > \alpha \geq .6$	Questionable
$.6 > \alpha \geq .5$	Poor
$.5 > \alpha$	Unacceptable

Source: George & Mallery (2003)

APPENDIX E

Item-total statistics for IT adoption (independent variables)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
V1a	55.32	114.473	.667	.955
V1b	55.36	115.869	.551	.957
V1c	55.28	114.383	.682	.955
V1d	55.24	114.026	.701	.955
V2a	55.65	113.914	.740	.954
V2b	55.70	113.084	.770	.953
V2c	55.68	112.510	.798	.953
V2d	55.66	112.782	.790	.953
V3a	55.67	112.853	.803	.953
V3b	55.63	112.634	.796	.953
V3c	55.68	112.291	.826	.953
V3d	55.69	111.562	.812	.953
V3e	55.68	112.497	.806	.953
V4a	55.68	114.146	.760	.954
V4b	55.68	113.613	.777	.953
V4c	55.69	113.986	.790	.953
V4d	55.66	113.364	.786	.953
V4e	56.00	123.164	.215	.961