IMPLEMENTATION FRAMEWORK OF ENTERPRISE RESOURCE PLANNING FOR SMALL AND MEDIUM ENTERPRISES IN NORTHERN STATES OF MALAYSIA

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DOCTOR OF PHILOSOPHY
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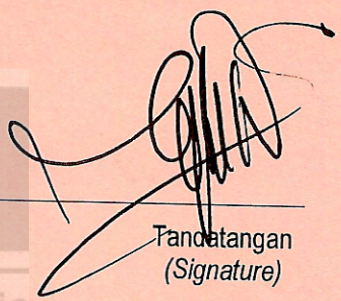

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ABSTRACT

ERP entails the managing and planning of company's resources in the most productive, effectiveness and profitable manner. It allows companies to integrate their information and business processes in a predetermined manner to ensure profitability and efficiency. Although, successful ERP implementation comes with various business competitive advantages however; Small and Medium Enterprises (SMEs) are facing great difficulties and challenges in achieving successful ERP implementation compared with Large Enterprises (LEs). Thus, this thesis proposed ERP implementation framework for SMEs which can reduce high degree of complex organization changes and enhance successful ERP implementation. This study makes used qualitative one-on-one in-depth interview research design. There are sixty respondents for this study from five different positions such as I.T personnel, ERP constants/Project Manager, ERP users, top management and customers. Those sixty respondents are from twelve different companies within northern region of Malaysia. The gender disparity of 60% to 40% ratio of male to female respondents was observed. This depicts that most SMEs assigned key personnel positions to males compared with females on ERP administration. In addition, most of the respondents are first degree (BSc) holders making 90% while the other 10% are second degree (Masters) holders. The findings of this study identified eight CSFs and seven CFFs that influence successful implementation of ERP in SMEs. The study has been able to propose an ERP implementation framework specifically targeted at the SMEs. The framework strengthens the position of existing ERP implementation framework through explication of the importance of ERP implementation in SMEs. This study specifically argues that factors such as funding, time and customization are very imperative for the successful implementation of ERP in SMEs which are missing in many past studies.

Keywords: ERP, Large Enterprises, SME, Implementation framework, Success factor, Failure factor, Business process

ABSTRAK

ERP memerlukan pengurusan dan perancangan sumber syarikat dalam cara yang paling produktif, berkesan dan menguntungkan. Ia membolehkan syarikat untuk mengintegrasikan maklumat dan proses perniagaan mereka dengan cara yang telah ditetapkan untuk memastikan keuntungan dan kecekapan. Meskipun, pelaksanaan ERP yang berjaya datang dengan pelbagai kelebihan daya saing perniagaan; Perusahaan Kecil Menengah (PKS) menghadapi kesukaran dan cabaran besar dalam mencapai pelaksanaan ERP Berjaya berbanding dengan Perusahaan Besar (LEs).Oleh itu, tesis ini meneroka rangka kerja pelaksanaan ERP untuk PKS manakala rangka kerja mengurangkan tahap organisasi yang kompleks dan meningkatkan pelaksanaan ERP yang berjaya.Kajian ini menggunakan reka bentuk penyelidikan temu bual secara kualitatif satu-satu-dalam. Terdapat enam puluh responden untuk kajian ini dari lima posisi yang berbeda seperti personil I.T, pemalar ERP / Pengurus Projek, pengguna ERP, manajemen puncak dan pelanggan. Sebanyak enam puluh responden terdiri daripada dua belas syarikat yang berlainan di rantau utara Malaysia.Jurang perbezaan jantina sebanyak 60% hingga 40% responden lelaki dan perempuan diperhatikan.Ini menggambarkan bahawa kebanyakan PKS menugaskan jawatan penting kepada lelaki berbanding dengan wanita dalam pentadbiran ERP. Di samping itu, kebanyakan responden adalah pemegang ijazah pertama (BSc) yang membuat 90% manakala 10% lagi adalah pemegang ijazah kedua (Masters). Penemuan kajian ini menunjukkan lapan CSF dan tujuh CFFsthat mempengaruhi kejayaan pelaksanaan ERP dalam PKS.Kajian ini telah mencadangkan rangka kerja pelaksanaan ERP yang khusus disasarkan kepada PKS. Rangka kerja ini memperkukuhkan kedudukan rangka kerja pelaksanaan ERP yang sedia ada melalui indikasi pentingnya pelaksanaan ERP dalam PKS dan menggambarkan faktor seperti pembiayaan, masa dan penyesuaian adalah sangat penting untuk kejayaan pelaksanaan ERP dalam PKS.

Kata kunci: ERP, Perusahaan Besar, SME, rangka kerja Pelaksanaan, Faktor keberhasilan, Faktor kegagalan, Proses perniagaan

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

GLOSSARY OF ABBREVIATION

ERP	Enterprise Resource Planning
SME	Small and Medium Enterprises
CSF	Critical Success Factor
CFF	Critical Failure Factor
IT	Information Technology
MRP	Manufacturing Requirement Planning
LE	Large Enterprises
OS	Open Source

CHAPTER ONE
INTRODUCTION

1.1 Overview

Over the years, companies have continued increasingly to ensure productivity and profitability by the use of information technology (IT). This is as a result of competitive environment created by the increasing challenging global market. This is motivating companies to be in the quest of improvement by adoption of new technology to achieve their target objectives. Enterprise Resource Planning (ERP) systems have gained more attention as an IT tool that can transform a company to withstand the increasing global market challenges. ERP, which emerged from Manufacturing Requirement Planning (MRP), is IT integration systems that enhance business function and processes by managing the whole company's resources successfully and efficiently. Likewise, ERP entails the managing and planning of company's resources in the most productive, effectiveness and profitable manner (Nordin& Ojeniyi, 2015; Hong, 2009). It allows companies to integrate their information and business processes in a predetermined manner to ensure profitability and efficiency.

ERP is a configurable information system package that enhances integration of business processes and information across and within functional boundaries within a company(Jackson, 2010). It is a comprehensive integrated software solution which enables complete business functionality and processes, in order to operate a company-wide view business operation from a single IT layer architecture (Al-Rashid, Alshawi & Al-Mashari, 2012). The key benefits of ERP system is related to productivity and efficiency of the company business because it enhance quick, timely and accurate information to ensure company's profitability. It also reduces company data collection period and avoid data duplication for a productive operation. It aids company managers in decision making; with timely access to information, managers can now make speed and precise decision. It

facilitates smooth and speed information communication between management and customers. Therefore it reduces business operational barriers between departments and business operation procedure. This is because ERP acts as a bridge that integrates business operation across boundaries and significantly strengthened links with company suppliers, dealers and customers (Trott & Hoecht, 2004). Hence, it creates a culture of excellence, productivity and profitability in the company.

The rationale behind the implementation of ERP have been researched by many scholars (Dezdar & Ainin, 2011; Kale, Banwait & Laroiya, 2010; Finney & Corbett, 2007; Soja 2006); who agreed that it is imperative for integration of financial information and data, enhancement of quick, fast and accurate departmental information sharing, reduction of operational cost and respond to the increasing global competition. The ERP system is useful for integration of many types of information processing abilities by encapsulating data into a single database. Efficient ERP implementation is advantageous to companies and it enables competitive advantages. This elucidates the rationale for ERP implementation as a vital element for enhanced business performance. Thus, Dillard and Yuthas (2006) observed that these benefits and gains are responsible for the adoption of the technology by large enterprises and likewise, more small and midsize enterprises have begun to adopt it too.

Despite these benefits and gains, Teittinen, Pellinen and Järvenpää (2013) pointed out that ERP successful implementation is fewespecially within small and medium enterprises (SMEs). They concluded that the issue with unsuccessful ERP implementation in SME is due to misunderstanding of implementation framework and lack of knowledge on the management of changes that ERPcaused within an organization. This concern is in-line with Maditinos, Chatzoudes and Tsairidis (2012) who suggested that there is a need to address the issue of high degree of complexity changes observed in SME during ERP implementation.

Hence, this study explore ERP implementation framework that will be suitable for SMEs whereby the framework will reduce high degree of complex organization changes and will enhance successful ERP implementation.

1.2Problem Statement

In global business setting, companies are seeking to maintain and improve their competitiveness in the ever more challenging global market. Information systems are usually used as tools to drive this improvement in customer service, increase effectiveness, reduce cycle time and decrease cost (Wang, Kung& Byrd, 2018; Tsai, Li, Lee & Tung, 2011). The Enterprise Resource Planning (ERP) systems have gained increasingly attention as an information system to enhance this drive of business improvement. The benefit of ERP systems should be seen in its effectiveness and efficiency of business process because companies using ERP should get more accurate and timely information which is the critical factor to companies' productivity. However, there is ineffectiveness and inefficiency experienced by SMEs compared with large enterprises (LEs) in the implementation of ERP (Phaphoom, Qu, Kheaksong, & Saelee, 2018; Morris, 2011).

ERP implementation brings not only business improvement and gain but also business pain and loss (Mahmud,Ramayah, & Kurnia, 2017; Dixit & Prakash, 2011). Most importantly in the area of ERP implementation cost, it had been discovered that ERP system implementation is highly expensive and time consuming especially forSME but faintly affordable for LE (Haddara & Zach, 2011). More disheartening the cost associated with ERP implementation is often greater than planned. This is due to many hidden costs involvements like customization, training, data conversion and integration.

Hence implementing an ERP system does not only take substantial time, cost and investment but is also associated with technical and business risk (Yeoh, & Popovič, 2016; Ali & Xie,

2012). It had been estimated that ERP implementation can take 1 to 3 years completion, depending on the technical capabilities of the consultant handling the installation (Jagoda, & Samaranayake, 2017; Nicolaou & Bajor, 2011). Consequently, this had resulted into abandonment or failure of ERP implementation in most SMEs (Yeoh, & Popovič, 2016; Bharathi, Pramod & Raman, 2012). A case where the technical partners cannot complete the installation within stipulated time and the management is running out of patient due to loss of business time, fund and investment. Also, there are many issues associated with the implementation of ERP globally ranging from non-uniform business practices in various countries, inexperienced ERP managers, stake holders conflict of interests and meta-national advantages usage.

Although there are many frameworks of ERP implementation in literature (such as Bancroft, 1996; Ross, 1998; Markus & Tanis, 2000; Parr & Shanks, 2000; Alizai & Burgess, 2011; Almajali, Masa'deh, & Tarhini, 2016;Ali, & Miller, 2017; Offor, & Cleveland, 2018), the most prominent are Bancroft (1996) and Ross (1998) due to their usage of autonomous multinational organizations and large sample size formulation. However, a recent research conducted by Offor, and Cleveland (2018) argued the need to further strengthen the existing framework of ERP implementation by creating less complexity and low cost factor involved. He equally advocated in his further work that many of the ERP implementation frameworks are targeted toward LE while only very few primarily considered SME as their case studies. This argument is also established in studies such as Simmonds, Tadesse, and Murthy (2018), Ali and Miller (2017) and Safavi (2013). Also Haddara and Zach (2011) suggested in their future work on the need to further explore the reasons why SME is not receiving appropriate attention compared to LE in ERP implementation. Hence there is need to explore ERP implementation framework that is basically targeted for SEs effectiveness and productivity.

Similarly, Ali and Xie (2011) observed complication and complexity with the existing ERP implementation frameworks. They identified lack of detailed explanation and understanding of CSFs and their corresponding attributes as the major factors militating against effectiveness and successful ERP implementation in SME. Subsequently, they call for a framework that can show deeper analysis and step-wise approach in implementation of ERP to SME.

In a similar scenario, Ali and Miller(2017) and Bharathi, and Parikh (2012) argued that there is still a lot of perceptual differences in the stages of ERP implementation frameworks. Different phases were defined differently by researches which is creating ambiguous implementation. Thus, they are suggesting for a simple and clear implementation framework that can enhance successful and productivity of ERP implementation in SME. Likewise, Offor and Cleveland (2018) and Dixit and Prakash (2011) advocated for the need to adopt a proactive approach toward ERP implementation to enable SME to endure the dynamic and increasing challenges nature of global market. Thus, this study will propose a framework that is simple, clear, detailed and step-wise in implementation of ERP to SME.

Connectively, in the vast literature there exist limited studies conducted within the region of Asia and Malaysia in particular (Jinno, Abe & Iizuka, 2017; Shahzad, Jen& Yuen, 2016; Noudoostbeni, Yasin, & Jenatabadi, 2009; Hooi, 2006; Huin, 2004). Majority of the studies were conducted in Europe while very few were conducted in India. Yeoh and Popovič (2016) and Mantakas and Doukas (2011) argued that culture has a great influence on the implementation of ERP. They reported that cross-country cultural differences have a major influenceon the effectiveness and productivity of ERP implementation. Resultantly, there is need to view ERP implementation from Malaysia perspective. Moreover, most of the existing literature used customer as their target participant in data collection whereas there is a need to

create a balance perspective by involving other stakeholders to enhance a wide and broad approach to ERP implementation in SME.

Additionally, many of the ERP frameworks are not theory-driven which was identified as the reason for weak foundation of empirical research in ERP implementation (Simmonds, Tadesse, & Murthy, 2018; Shah & Bokhari, 2011). Most of the frameworks are based on case study research without incorporating an underpinning theory or framework as a guidance for the formulation of such ERP implementation framework. Therefore, this study provide new perspective in understanding how successful and productive ERP implementation can be achieved in SME from Malaysia perspectiveand based on DeLone and McLean model (2003).

1.3Research Questions

Based on the problem statement, the overall research question of this study is on how to design a successful implementation ERP framework for SMEs. From this overall research question, the following research questions were proposed:

a) What are the Critical Success Factors (CSFs) that influence successful ERP implementation in Malaysia SMEs?

b) What are the Critical Failure Factors (CFFs) that influence ERP implementation in Malaysia SMEs?

c) How do CSFs and CFFs affect successful ERP implementation in Malaysia SMEs?

d) How can the CSF and CFF be used to enhance successful implementation ERP frameworkfor SMEs?

1.4Aim of the Study

The main aim of this study is to propose an implementation framework of ERP for SMEs in Malaysia. To realize this major objective, subsequentsub-objectives were pursued:

a) To investigate Critical Success Factors (CSF) that influence successful ERP implementation in Malaysia SMEs.

b) To investigate Critical Failure Factors (CFF) that influence successful ERP implementation in Malaysia SMEs.

c) To examine the roles played by CSFs and CFFs in achieving successful ERP implementation in Malaysia SMEs.

d) To design an implementation framework of ERP for SMEs using CSFs and CFFs.

1.5Scope of the Study

This study made use of SMEs that have implemented ERP within the northern region of Malaysia and must have registered with Malaysia government for over three years. Also the type of ERP application package in use by the SMEs was not a major concern to the study. The number of modules of ERP package for these SMEs were not considered too. This is because the study majorly focused on the implementation and usefulness of these ERP modules rather than the number of implemented modules.

1.6Significance of the Study

The significance of the studycan be explored from two major perspectives namely: theoretical and practical.

1.6.1 Theoretical Contribution Perspective

The outcome of this study strengthens the position of existing ERP implementation framework through explication of the importance of ERP implementation in SMEs from the Malaysia perspective. It contributes to existing knowledge of ERP implementation by expositing the role of ERP using Malaysia perspective. Secondly, this research bridges the literature gap in the knowledge of ERP implementation within Asia and Malaysia in particular.

1.6.2 Practical Contribution Perspective

This framework serves as a guide for ERP consultants and SMEs managers that intend to implement ERP as an integrated software solution. It acts as pivot for smooth, efficient and successful ERP implementation in SMEs.

1.7Definition of Key Terms

The following are the key terms used in this study:

a) ERP: Is a configurable information system package that enhances integration of business processes and information across and within functional boundaries within a company

b) SME: Enterprises with staff strength not more than 150 and annual profit less than RM 10 million.

c) ERP implementation: Is the deployment of ERP units systems or modules in a business environment.

d) ERP implementation framework: Is the stepwise deployment of ERP in order to enhance better understanding and comprehension of the complex implementation processes of ERP in a business.

1.8Structure of Thesis

Next chapterpresented detailed discussion on important concept in ERP, ERP implementation and Malaysia SMEs. Detailed discussion on existing ERP implementation framework, ERP CSF and CFF will also be covered in the chapter. While Chapter Three outlined the research methodology which will explores the rationale behind the usage of qualitative research method for the formulation of the implementation framework. Details of the research methodology will be discussed in line with activities to be followed during the study. Presentation of the study analysis was done under Chapter Four which followed the methodology outlined in Chapter Three whereas Chapter Five gave detailed discussion on presented analysis in Chapter Four. The last chapter of this thesis is Chapter Six presented the implication, contributions and conclusion of the study was laid. This last chapter also showcased the study recommendation, limitation, future work to be carry-out,and the overall summary of this study.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

In an uncertain unstable and turbulent business situation, a company develops its resources and potentials to advance and preserve its competitiveness advantages. The needs for company to provide service or product at the appropriate place and time at the lowest cost enhance company's competitive advantage (Johansson, 2013). Many companies are employing ERP solutions to respond to these competitive advantages in terms of customers' demands with speed and accuracy. The effective usage of ERP systems is vital to stay competitive and profitable. To further understand the significance of ERP systems, different theories have offered insights into finding the critical success factors of ERP implementation and understanding the consequences of it on companies (Françoise, Bourgault&Pellerin, 2009).

The main significance of ERP is to increase and improve information dissemination within a company (Zhao & Yu, 2013). Ideally, ERP solutions advance cooperation, teamwork and communication between all the departments in a company like payroll, inventory management, purchasing, and personnel. Integration permits different units within a company to have easy access to information and communication sharing with each other. Also, ERP software regulates flow of information within a company. This simplifies data and information flow between the various departments in the business (Haug, Arlbjørn, & Pedersen, 2009). In an ERP system, information inputted by a department is instantly accessible by another department without the need to double check it. It allows users to have a real-time and single view of their company's available resources and commitments (Minahan, 1998).

Despite the numerous advantages, companies still have noteworthy problems implementing ERP software in particularly small and medium enterprises (SMEs) (Addo-Tenkorang & Halo, 2011). ERP solutions are disgracefully and extremely complex and implementingit often leads companies to reorganize their internal organizational processes. These difficulties have led many SME companies to abandon their ERP idea or implement the solution in restricted and limited capacity (Bharathi, Pramod & Raman, 2012; Bradford, 2001). Previous to ERP solutions implementation, processes are not usually successful but they were easy and simple. The concept of departmental integration and communication can lead to exceedingly difficulties (Law, Chen & Wu, 2010; Koch et al., 2001). The growing in usage of ERP software and the significanceinterest in continuity of ERP implementation in both LEs and SEs globally is creating a competitive environment that other companies must follow to survive.

2.2 ERP Concept

Enterprise Resource Planning (ERP) is a functional and useful system solution to organize information, decision, and activities across many different units and departments in a company (Jacobs & Weston, 2007; Basoglu, Daim & Kerimoglu, 2007; Koh, Gunasekaran & Rajkumar, 2008). ERP is an approach to integrate business management and information technology to enhance profitability, productivity and survival in this ever increasing competitive global marketplace.

2.2.1 ERP Definition

ERP had been defined in various ways within the vast literatures. Minahan (1998) defined it as a complex software system solution that ties together and automates the basic processes of a business. ERP was seen as an automated spread-sheet that can manage and analyse a company's resources such as commitments, cash and inventory, despite the source of input of the data. Similarly, Watson and Schneider (1998) viewed ERP as a packaged, customized, integrated software-based solution that handles the mainstream of an enterprise‘s system requirement in all functional areas, such as finance, accounting, sales, marketing, manufacturing and human resources . It enhances information coordination and integration which eliminates difficult cross-interrelated department in any organization process (Davenport, 1998).

According to Koch, Slater and Baatz (2001) ERP systems are generic illustration of the manner and ways a classic company should operates business. ERP enhances integrationof functions and departments across a company onto a singularlystand-alonesystem set that supply all of the other branches of the organizational needs. Also Komiega (2001) assert that ERP is the amalgamation of business processes, software, and hardware, in order to obtain a specific and general pattern of business solution model that will support efficiency.

Connectively, Yusuf and Gunasekaran (2004) argued that ERP is an incorporated system that employs centred management database and client architectures server networkthat integrate different systems, standardize functional individual valuable information flow and capture management data. Equally, Basoglu, Daim, and Kerimoglu (2007) explained that ERP systems is an integrated software solutions used to manage and analyse a company‘s resources and activities. Through implementing ERP system, a company can exchange

information with customers and suppliers trim down the overall costs and make accurate data available in real time (Umble et al., 2003, Basoglu et al., 2007).

Hence, a firm implementing an ERP system can have benefits such as quick and accurate information gathering, improved interaction with customers, improved product quality, low inventory cost and speedy decision making. Therefore, the combination of Minahan (1998) and Basoglu, Daim, and Kerimoglu(2007) definitions will be used for this study. ERP is an integrated information software system that enhances business processes and functions through managing and analysing the entire company‘s resources effectively and efficiently.

2.2.2 ERP History

ERP has a rich and well documented history in much of the literature. The system has a genesis from the manufacturing industry software development. In 1960’s the manufacturing industry focus on inventory control (Mabert, Soni & Venkataramanan, 2000). Later the focus got expanded due to increase in activities and processing inventories, there was a shift to a more total inventory management known as Inventory Management and Control (IMC). The IMC uses bills of materials and masters plans to decide raw materials as required by organization. Subsequently, in the 1970’s, Inventory Management and Control (IMC) then changed to Materials Requirements Planning (MRP). MRP had more functions, utilities, and tools such as resource analysis, forecasting and capacity planning to address precedence and capacity management.

Subsequently, the Materials Requirements Planning (MRP) underwent some modifications which evolved to Manufacturing Resources Planning (MRP2) in 1980s to integrate more functionality like sales, financial interface, operation planning and simulation. Afterward,

MRP 2 functions were further modified to include more advances areaslike as project management, human resource, finance and engineering. The term ERP (Enterprise Resource Planning) was used to illustrate this new modification which was stronger in integration, broader in capacity and more efficient in dealing with various external and internal units (Jiang, Jin & He, 2011). Consequently, there is continuous development and improvementfor company-particularrequirements; this ensures the advancement of ERP system to many sectional areas (Siau &Messersmith, 2003: Davenport, 1998). Many of the previous literature aimed at the growth and implementation of ERP systems within large enterprises LEs.

According to a survey carried out by Esteves and Pastor (2001) clarifying information systemsconducted during 1997-2000. They concluded their search with inclusion of academic conference proceedings and IS journals', using major words combination especially enterprise. Their findings also covered ERP vendors which included SAP, Oracle, BAAN and PeopleSoft. It was pointed out there is lack of deeper analysis studies on satisfaction of user and involvement in ERP. The nature of interdisciplinary of ERP was identified. Also they concluded by suggesting that further studies on ERP should be handle with this perspective approached.

Similarly, in a major study by Botta-Genoulaz, Millet and Grabot (2005) research direction in ERP was charted using literature review. They reviewed selected publications from management, science and sociology domains between 1996 and 2003. They observed that there was an increase of 18 to 461 publications between 1996 and 2003. The reason for this increase was due to significance expansion in ERP implementation during this same time period. Also Akça, Esen and Özer (2013) pointed out that similar increase was observed between 2004 and 2013 due to the application of ERP to other domains like education, healthcare and others. It was identified that the changing dynamic and development of ERP

systems with it different cultural implication should be consider during implementation. Likewise, it was maintained that impaction awareness of ERP system and it implication to resolve all issue to its successful implementation should be considered. Finally, Botta-Genoulaz, et al. highlighted the complexity nature of ERP implementation and noted the insufficient of step-wise framework that can completelyintegrateall issues.

Recently, Addo-Tenkorang and Halo (2011) carry outa survey that identifies new trends in ERP implementation and research. A review of 154 published articles on the topics of Enterprise Resource Planning (ERP) between 2005 and 28th May, 2010 were examined. In their future work they advocated for more research work on ERP implementation among SMEs. They observed that very few work were done on SMEs while majority focused on LEs. Additionally, they identified the need to develop a specialized ERP implementation framework for developing countries because of cultural difference. It was observed that most of the developed ERP implementation frameworks are from European and America, whereas culture plays a significant role. Finally, lack of literature and research were discovered in Africa and Asia.

Connectively, Haddara, and Zach (2011) in the same way conducted a study that identify new trends in ERP research. A review of 77 articles across 10 years publication of ERP implementation in SME and LE were surveyed. They concluded that SME did not receive appropriate attention compared to LE. The need to research on ERP failure was advocated to assist stakeholders in avoiding previous pitfalls in the implementation of ERP. Also it was observed that most of literature used one sided respondent in data collection. They argued that there is a need to consider all stakeholders' (management, ERP consultants, ERP suppliers, IT managers, Users and customs) who are involved in ERP implementation as

respondent to ensure rich data. Thus, this study will make use of all stakeholders as respondent in data collection.

2.2.3 ERP Classification

As discussed previously, ERP is basically software used for business management which enables the business to achieve more in term of coordination and managing the whole business operations. It integrates many application in order to achieve storage, collection, manage and interpretation of business date from many business operation and activities (Wiebel, Valsecchi & Gegenfurtner, 2014). In addition, ERP operates in real time without relying on periodic update of differently integrated system (Amid, Moalagh & Ravasan, 2012). This is done by sharing a common database that supports all applications on it. Also, it provide a consistent rely and feedback across the differently integrated modules.

The differently integrated modules make up the functionalities of ERP whereas each module is responsible for activities and operations of different business process (Katerattanakul, Lee & Hong, 2014; Blankertz, Lemm, Treder, Haufe & Müller 2011). This implies that ERP is makes up of multiple enterprise software modules which are integrated together to meet the specific needs and technical standard of the business. Examples of ERP modules includes those for product finance, planning, HR, material purchasing, accounting, inventory control, distribution, and marketing (Iris & Cebeci, 2014). For instance, the Finance module handles all financial management of the business and it functions includes accounts payable and receivable, fixed assets, financial reporting and treasury management. Also, the inventory control module handles functionality such as shipment, orders, on broader scale, logistics, billing and warehouse management. The integration of these entire modules with a centre database makes the core idea of an ERP system.

There is no specific classification of ERP in the vast literature however, based on studies by Jakupovic, Pavlic and Fertalj (2009), Botta-Genoulaz and Millet (2005), Muscatello, Small and Chen (2003) and Mabert, Soni and Venkataramanan (2003) it was suggested that the number of implemented modules can be used to identify if the business operation is large or small. For instance, Muscatello, Small and Chen (2003) pointed out in their study that small and midsize businesses implements small numbers of modules compared with large business enterprise. Likewise Mabert, Soni and Venkataramanan (2003) concluded that business size also determines complexity and convolution involvement in ERP implementation. Hence, there is no specific classification of ERP, therefore this study made used of suggestions by Muscatello, Small and Chen (2003) and Mabert, Soni and Venkataramanan (2003) where companies that implement full package module will be classified as LE and those with reduced numbers will be classified as SME

2.2.4 ERP Benefits

Previously, it had been established that ERP is an integrated information software system that enhances business processes and functions through managing and analysing the entire company‘s resources effectively and efficiently. It enables a company to automate their business operation to achieve efficiency, profitability and effectiveness. The major necessity for any technological advancement in a company is to create a culture of readiness and accomplish in business mission (Reed, 2002). Johansson and Newman (2010) shared this view that ERP users will accomplish their organizational operational mission and have an edge of competition over their competitors in the ways and manner they structured their ERP implementation and exploit other opportunities at their reach. ERP can be seen as a building block whereas company advantageous benefit is gotten from the manner and ways these

building blocks are constructed to enable them survive the competitive global market war (Malhotra &Temponi, 2010).

Similarly, Al-Sehali (2000) stated five major gain of an ERP system which includes reduction of cycle times, elimination of redundant data and operations, easier access to reliable information, pricecutback and flexibility in a dynamic business setting. Cycle time means the quantity of time essential to accomplish a business operational contract from beginning to finishing point. For instant, the cycle time is the period between when an order of supply is made and inputted into the system as requested to the duration that order payment is made. This was referred to by Al-Sehali (2000) as time reduction achievement by delaying the information flow in between organizational unit operations. Therefore, ERP system allows information to broadcast andshared more rapidly, via the mutualnetwork of database, than aun-integrated system. Hence, it leads to a shorter time frame to execute a business transaction and makes business decision faster and dependable in nature.

Furthermore, ERP system allows company to establish a confirmed and established set of business process and procedure. It permits companies to readjust and restructure their functionality to the dynamic and rapidly business changes, whereas a modifiedfunction has to be redeveloped (Velcu, 2010). The systems are intended to readjust and respond swiftly to new requirement of business burden. This is imperative because of the need to respond to the changing environment. Hence, most ERP vendors have identified this flexibility as a unique benefit of the system (Wang & Liu, 2010).

In addition, ERP system offers access to reliable data throughout the whole company. This is due to the use of a database system procedure; which provides an easy access to information by all company departments (Grabski, Leech & Schmidt, 2011). It also enhances archiving of information on a database whereby department and units can make use of previously storage

and used information on the system. This ensures that decisions are made at a prompt time which is needed by most company executives to move their businesses forward (Hwang & Grant, 2011).

Similarly, Esteves (2009) also stated that redundancy is minimized when database network is in use which brings about global accessibility and user friendliness in the company. This process also ensures protection for departmental information and data. So that information entered is secured and archived which can be seen and used by other units in the company. The major aim of this is to deflect task redundancy within the operation of the film (Al-Sehali, 2000) and to bridge standard of operations. This concern was likewise expressed by Koch et al. (2001) who argued that there are two major need of implementing ERP which are to ensure human resources information and manufacturing processes standards

Although ERP systems have many benefits, there have also been associated cost implications. There are obviously financial costs linked with ERP implementation. Hence, the identification of complex implementation of ERP systems has been observed. In a major study done by Umble and Umble (2002), they concludes that ERP systems do not only necessitate extensive fund and time for implementation, butit also disturborganizational processes and culture which generate burden of intensive requirements of training and usually end up inefficiencyplunges and mismanaged clients priorities. Thus, ERP implementation usually generates losses both in efficiency and profitability for companies if not well managed.

2.2.5 ERP Future

ERP system has evolved to Manufacturing Resource Planning (MRP II) from Material Requirement Planning (MRP) system to appropriately meet the dynamic nature of global market. Subsequently, it evolved into enterprise wide system that engage detailed information right from development and procurement to marketing, ordering, manufacturing, shipping and logistics even up to invoicing, human resource management, quality management and accounting (Grabski, Leech, & Schmidt, 2011). Perhaps, the most noteworthy change in ERP is its shift from strict methodcomputerization based on repetition and scale, to the orchestration structurefor an agile, flexible response to dynamic changes in the global market (Molinaro, Barber, & Carreiras, 2011). Thus, it provides highly automated, predictive, prescriptive analytical, autonomous method to business operation to meet her customer needs.

Similarly, the need to exploit ERP systems as integrated architectures for mobile deployment of enterprise applications for creation of space within the system had been advocated (Frank & Kumar, 2012). This is challenging ERP vendors to make their design compliant to the future usage. This is a big step towards increasing the pace at which the ERP systems can change course alongside an enterprise imparting full functionality (Porkert, & Sutton, 2013). It makes desirable collaboration without the need for a very expensive and crippling transformation. Thus, it enhances reduction in total cost of ownership, increases in user acceptability, reduction in implementation timing, increases in system reach and reduction in environmental impact (Felderer, Tanriverdi, Löw, & Breu, 2013).

2.3 ERP Implementation Framework

Not only are there many definitions and futuristic research plans on ERP, but there are also many related researches on ERP implementation. Indeed, due to its convolution and complexity; the ERP systems are obtained in modular manner and implementation might not be done at once. Sometimes, a phase-in method is used where each module are implemented at a given time. Also, due to the complexity and convolution many scholars have advocated for simple and details framework of implementation. This framework is needed to provide insight and guide to the smooth implementation of ERP. An example of this is found in SAP; where ERP software package is suggested to be implemented as inside-out. According to Cissna (1998) this approach usually installs the financials and inventory modules first, and then the distribution and sales module, material management module, production planning module, and other modules come after.

Similarly, the best of breed strategy can also be used in ERP implementation. It involves the implementation of different software packages, for different purposes and functionality (Janols, Day & Orr, 2013). The software packages are connected together through programming interfaces but might not share a same database. Miranda (1999), suggested that it reduces the menace of largely malfunction (i.e., sectional breakdown should not lead to total system failure), this is because generality functionality is greater (i.e., the best of the unit applications are being moulded into one whole system). However, the disadvantage of this strategy is that its leads to ERP simulation due to the fact that is no shared database and repetitive data entrance can be obtained. This strategy was referred to by Koch, Slater, and Baatz (2001) as franchising; the independent ERP units systems installation. Also, Sherman (2000) echoed that this approach is used as an operational engine which can take additional module packages for upgrading.

In the same way, all the ERP units systems or modules can be installed in a single major event across the entire company at once. This unique strategy is known as a big bang ERP implementation approach. According to Koch et al. (2001) this strategy will make companies to at once install the ERP system instantly by totally removing the old system at the same time. This strategy seeks to deals with issue of enterprise application ownership by minimizing cost (Miranda, 1999). However, it creates less time for learning process to users and some vital details might be overlooked due to the rush to change (Okrent & Vokurka, 2004). Also failure in a section of the system will affect the whole system and corrective measures are more complex than originally perceived. Thus, this study intends to examine the success and failure factors of ERP implementation.

More importantly, there have been extensive researches on various issues in ERP implementation. Many of these researches focused on ERP technical concernsas it affect data standards, ERP integration, hardware architecture and configuration (Markus & Tanis, 2000; Jordan & Krumwiede, 1999; Olinger, 1998). Equally, some other researches consider tactical issues such as measurement of the benefits, and resistance to change, process and organizational adaptation (Jacobs & Whybark, 2000; Soh et al, 2000; Laughlin, 1999; Swan, Newell, & Robertson, 1999; Hammer & Stanton, 1999; Glass, 1998). For instant, Zain (1995) argued that strategy is a vital issue in implementing ERP. He observed that some companies develop ERP in-house while some outsource ERP to the third party or simply make use off-the-shelf software from the open market. Others companies make use of phased transition strategies instead of making a complete drastic transfer from legacy system to ERP system. Zain (1995) advocated that different companies used different style in the implementation of ERP.

In the same vein, Hammer and Stanton (1999) related ERP with reengineering issues, since ERP offers feedback that flows horizontally across business. They suggested that companies should make use of ERP as an integrative mechanism to create a new fashion of management. Also Brown and Vessey (1999) examined ERP implementation variables that are critical to successful implementation and contingency factors that are keys to ERP implementation. However, case study research method was used and cannot be used for generalization (Delen, Dalal, & Benjamin, 2005). Davenport (2000) in his research concluded that the major elements of a rational approach to implementing an ERP system. This approach consists of two parts namely preparing the users and preparing the technical system. Preparing the users involves training and knowledge acquisition. While preparing the technical system is to adopt, configure and integrate the system for usage. Thus, failure of ERP implementation can be associated with these two preparation parts. When the users and the technical environment are not well synchronized, it might lead to abandonment or failure of the implementation process.

Similarly, Delen, Dalal, and Benjamin, (2005) analyzed the key challenges facing abroader use of enterprise modelling and analysis methods. They concluded that most of ERP implementation framework lacks integration ofheterogeneous successful concepts. Hence, they do not adequately address the challenges of framework correlation, representation extensibility, and framework compiling in a single homogeneous environment. These challenges have contributed to the perception that these ERP frameworks are complex, time-consuming, expensive, non-integrated, and usable only by specialists. Likewise, Ganesh, and Mehta (2011) research on strategic approach for ERP implementation at SMEs argued that a good strategic approach to ensure successful implementation of ERP at SME should promote the Critical Success Factors (CSF) and avoiding the Critical Failure Factors (CFF). They use quantitative survey method to explore thirty CSFs and CFFs that can lead to success and

failure of ERP implementation. However, they concluded that there is need to investigate the correlation between the ERP implementation and adoption process. Also they observed limited in-depth and comprehensive framework on ERP implementation in SME.

More recently, Batista, Costa, and Aparicio (2013) proposed an ERP Open Source (OS) localization framework to solve the issue of internationalization in ERP system. However, they observed that to achieve the four levels of localization depends on how the ERP has been internationalized and adjustment between the features offered in the original ERP and the specifics of a particular country or region. This implies that cross-culture or cross-country factors still have a vital influence in the implementation of ERP.

Researches are more concern about success and productive implementation of ERP that will lead to positive business transformation (Willcocks, & Sykes, 2000). By developing good strategic approaches of ERP implementation for business; it will result in huge turn-around in the business profitability and productivity. Similarly, ERP implementation frameworks are being developed to enhance better understanding and comprehension of the complex implementation processes of ERP.

Bancroft, Seip, and Sprengel (1996) proposed a framework of ERP implementation after a detailed research on three multinational companies with 20 consultants. The framework is divided into four pre-implementation and one actual implementation phases. The pre-implementation phases are planning (focus), analysing (as is), design (to be) and construction (construction & testing) while the main implementation phase is known as go live. The framework covers all major ERP implementation initiatives and activities, starting from planning to post implementation.

The planning phase is the first pre-implementation phase and it consists of initial project initiatives and activities such as project team selection, formation of steering committee,

project guide development and project plan creation. The second phase analysis is made up of initial ERP system installation, business process analysis, business transaction mapping on ERP functions and project team and user training etc. The Design phase consists of high level and detailed user acceptance design, interactive prototyping with steady communication with users of ERP systems. While the last pre-implementation phase construction includes comprehensive configuration development, population of actual data in test occasion, interfaces building and testing, creation and testing of reports, system and user testing. The actual implementation phase referred to as go live involves building networking, desktops installations and organizing user training, support and maintenance.

In the same twist, Ross (1998) improved on Bancroft et al.'s (1996) framework by analyzing ERP implementation in 15 LEs. Ross (1998) framework is made up of five phases, which include Design, Stabilization, Implementation, Transformation and Continuous improvement. The first phase, Design is where guiding principle, procedure and decision making for the implementation are determined. The implementation phase is similar to Bancroft et al.'s (1996) phases of as is, construction and testing, to be and actual implementation. The Stabilization phase is dedicated for improvement and problem fixing. This is followed by the continuous improvement phase which is meant to ensure stableenhancement when functionality is added. Finally, the transformation phase ensures maximal flexibility of the system with the business operation.

Similarly, Markus and Tanis (2000) argued that Bancroft et al. (1996) and Ross (1998) frameworks do not give a clear understanding on the pre-implementation phases. They developed a four-phase framework for implementation of ERP. The phases include chartering, shake-down, project and an onwards and upwards phase. The chartering phase includes package selection, the development of the business case for the ERP, budgeting

and identification of the project manager and schedule approval. Their definition of project phase is like Bancroft et al. (1996) four phases (as is, main implementation, to be, construction and testing) and Ross (1998) implementation phase. The phase includes system configuration and rollout occurs and major activities such as, system integration, testing, software configuration, data conversion, roll-out and training takes place. The shakedown phase refers to the period when system is beginning to operate normally by removing all glitches and implementing standards. Finally, the Onward and upwards phase is similar to Ross' (1998) continuous improvement and stabilization phases. This phase defines continuous maintenance, up-grade user, support or enhancements required by ERP system and focuses on any further extensions.

Parr and Shanks (2000) developed the Project Phase Framework (PPM) which focused on project implementation and factors that bring about successful implementation at each phase. The framework has three major phases; Planning, Project and Enhancement. The Planning phase is made up of selecting an ERP application, selection of project team, project scope determination and broad implementation approach, formation of steering committee and determination of resources. While Project phase comprises a range of activities from recognition of ERP modules to installation and cut-over. The phase is made up of sub-phase like set-up, reengineering, design, configuration and testing, and installation. The last phase is the combination of Ross's (1998) continuous improvement and stabilization phases and Markus et al. (2000) on-wards and upwards phases. The Enhancement phase is made up of stages of system repair, extension and transformation.

In more recent time, Alizai and Burgess (2011) proposed a conceptual framework using a strategic approach containing ERP implementation processes, stages, factors and issues associated with adoption in the midsize business. The framework is classified into five major

stages of ERP implementation; planning, set up and engineering, system design, configuration and testing, and installation and go live.

Critically, there were overlapping definitions and functionalities in Bancroft et al. (1996), Ross (1998) and Markus et al. (2000) frameworks. Planning phase came before actual implementation only in Markus et al. (2000) and Ross (1998). Also these two frameworks group the actual implementation into a single phase whereas Bancroft et al. (1998) characterized the stages of the main actualization of project into four project sub-phases (as is, construction and testing, to be and actual implementation). Likewise, only Ross (1998) and Markus et al. (2000) defined post implementation phase which includes transformation, continuous improvement or upwards and onward phases. However, none of these frameworks relate critical success factors or critical failure factors to the phases of implementation.

A closer look at these frameworks revealed that most of them focused on LE and very few focused on SME (Safavi, et al., 2013). Even the ones that focus on midsize business were found to be lacking deeper analysis and step-wise strategies for smooth and easier implementation (Ali & Xie, 2012). This was also supported by Bharathi and Parikh (2012) argument that there is lot of perceptual difference in the different frameworks of ERP implementation. They later advocated in their future work for the need to explore simple and step-wise strategies for the smooth, successful, and efficient ERP implementation. Also most of these studies were done in Europe and America for the development of the ERP implementation framework (Haddara & Zach, 2011). Hence, this study shall explore ERP implementation framework for SME from Malaysia perspective.

An early ERP framework was suggested by Bancroft, et al. (1998) on implementing the ERP system which is known as R/3 by SAP. The suggested five-phase framework focused on the

activities and acquisition beginning from the project through the implementation of the system and ending with the phase of implementation. However, this framework is viewed to represent limited ERP framework procedure and was found not providing for on-going maintenance, continuing and support organizational changes that are usually characterized with ERP projects (Fowler & Gilfillan, 2003; McCredie & Updegrove, 1999).

Greci and Hull (2004) presented a framework known as Systems Development Life Cycle (SDLC) to incorporate the disparities in differences in the existing ERP implementation framework. They suggested that the implementation phase framework of ERP should follow the order of Planning, Analysis, Design, Implementation and Support which was similar to SAP argument (Planning, Analysis, Configuration, Installation and Support). However, Peslak, Subramanian, and Clayton (2008) argued that SDLC is ideal for managing in-house software development initiatives. They advocated that implementation of commercial off shelf ERP systems is influence by many factors. Their arguments were supported with the fact that no other research were found in the vast literature which used the SDLC.

Similarly, Worrell (2008) in his dissertation adapted a framework based on Markus and Tanis (2000). The adapted framework is summarized in Figure 2.1 below.

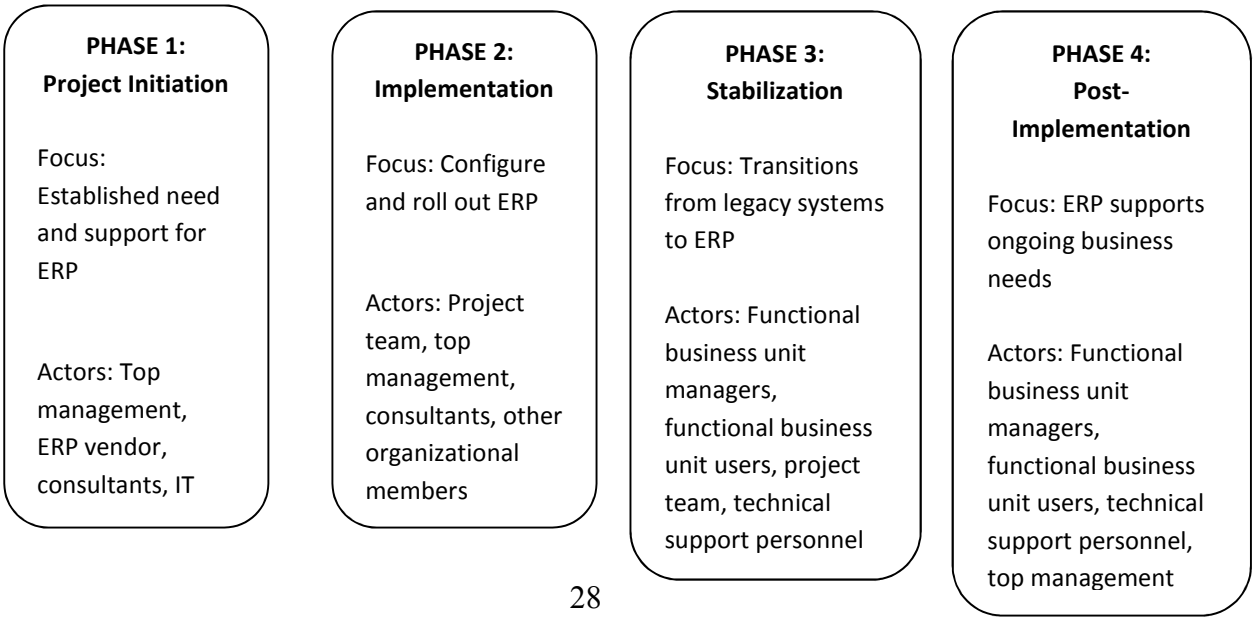

Figure 2.1
ERP Frameworks
Source:*Worrel(2007)and Markus and Tanis (2000)*

This framework improved on Bancroft, et al. (1998), Markus and Tanis (2000) and Greci and Hull (2004) by integrating a post-implementation phase which will handle on-going business needs. The post-implementation phase also ensures maintenance, support, and continuing organizational changes that are usually characterized with ERP projects as mentioned by Fowler and Gilfillan (2003) and McCredie and Updegrove (1999).

Likewise, Ganesh and Mehta (2011) proposed a framework to address precision and clarity in the implementation of ERP projects. Figure 2.2 shows the summarized framework.

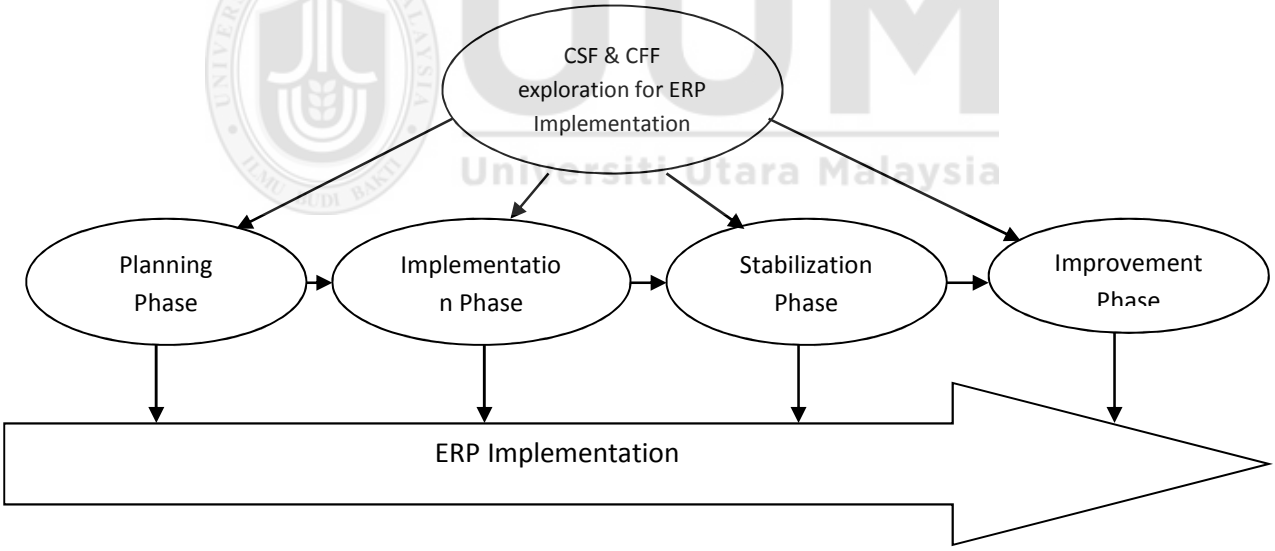

Figure 2.2
ERP Frameworks
Source:*Ganesh&Mehta(2011)*

Improvement phase was substituted for post-implementation phase whereas it was defined as the achieving benefits, updating new modules, focusing on continuous development and transformation of the ERP to organizational change to accomplished profitability and productivity. However, these frameworks were found to be too complex (Safavi, 2013) and

lack deeper analysis and step-wise approach in the implementation of ERP in SMEs (Ali &Xie, 2012).

Various researches have recommended the need to strengthen these existing frameworks of ERP implementation to create less complexity and high cost factors involves in ERP implementation especially in SEs (Safavi, 2013;Ali &Xie, 2012; Bharathi&Parikh, 2012; Dixit &Prakash, 2011; Haddara&Zach, 2011; Noudoostbeni&Ismail, 2010). This is because majority of studies in the vast literature centered on ERP implementations in LEs while less has focused on SEs. Noudoostbeni and Ismail (2010) and Huin (2004) argues that unless differences between small and large company are understood, managing ERP Projects in SMEs will continue to be painful, slow, unproductive and unprofitable. Hence, this study shall seek to achieve a step-wise and deeper analysis of framework of ERP implementation. It will provide new perspective in understanding how to successfully implement framework for SMEs profitability and productivity.

2.4 ERP Implementation Critical Success Factor (CSF)

The implementation framework gives guidelines and procedure to achieve smooth, successful, and efficient installation while Critical success factor (CSF) are the crucial factors that must be considered in implementing the framework to ensure efficiency and effectiveness installation (Zain, 1993). CSF is commonly used in other domains including manufacturing systems, project management, and engineering (Holland & Light, 2003). CSF helps business managers to benefits from their investment in innovation technology to push their business to the edge of the competitive global market place.

CSFs can be classified based on stage of innovative processes which include initiative, execution and assessment (Hage& Aiken, 1970) or idea assessment, implementation, problem solving and dissemination (Utterback, 1971). Therefore the issue of critical success factors (CSF) and ERP implementation as metaphor into growing concerns by researchers (Aladwani, 2001). Commonly CSFs are adapted into researches to establish the levels of success or failure for ERP implementation. For instance Bancroft et al. (1998) presented the nine CSFs to ensure efficient and effective ERP implementation.

Bancroft et al. (1998) presented the nine factors based on their study and recommended them as being considered as critical to ensure successful implementation. These factors included project management, communication, project methodology, top management support, corporate culture for change management team-composition, commitment to change, training, and business process change. They argued that all of the nine factors must be considered to resolve issues with high cost and high complexity stakes of ERP implementation.

Correspondingly, Holland and Light (2003) identified six CSFs which include planning, business vision, legacy information systems strategy, top management support and project schedule. They also give five tactical factors framework to achieve smooth ERP implementation which includes client consultation and acceptance, personnel, business process change and software configuration, monitoring and feedback, communication, and troubleshooting. Tactical factors deals with the activities necessary to implement the project and advance as the project expanses.

Similarly, Nah, Zuckweiler and Lau (2003) conducted a synthesis of existing literature and identified 11 CSFs crucial to the success of ERP implementation projects. The CIOs of Fortune 1000 companies were then surveyed by Nah et al. (2003) to measure their

perceptions of the criticality of the 11 CSFs to an ERP project. This was used to rank the top five factors most critical to a successful implementation as being (a) top management support, (b) having a project champion, (c) teamwork and team composition, (d) project management, and (e) a change management culture. This ranking corresponds with factors identified by other researches (like Bancroft et al, 1998; Ferratt et al., 2006; Holland & Light, 2003).

Ngai, Law, and Wat (2008) built on the study of Nah et al. (2003) by conducting study with 11 factors proposed by Nah, et al based on a critical review from 2006 to 2007. They used 48 peer to peer reviewed articles and concluded with addition of 7 CSFs making up to 18 CSFs. Their findings were based on factors generated across 10 different region and countries. They assert to Neh, et al CSFs however disagreed that cultural influence has a great effect on CSFs implementation. Hence, CSFs cannot be transferable within countries due to cross-cultural differences. They suggested the need to investigate the role of cross-cultural difference in the implementation of ERP. The findings of Lee, Lee, Olson and Chung (2010) and Mantakas and Doukas (2011) supported the position of Ngai, Law, and Wat (2008) that cultural differences have a great influent on ERP implementation within inter-counties and cultural boundaries. Hence, there is a need to explore CSFs that influence successful ERP implementation in Malaysia. Also, Haddara and Zach (2011) identified limited amount of literature within Asia and practically in Malaysia. Therefore Table 2.1 shows that many researches (Shaul & Tauber, 2013) cited common CSFs.

Table 2.1
A Summary of the Critical Success Factors In the Implementation of ERP

FACTORS	AUTHORS
Project missions and strategies	Goni, Chofreh and Sahran (2011), Nah, Zuckweiler and Lau (2003), Hamilton (2003), Zain (1995), Nicholas (1989), Slevin& Pinto (1987), Bessant (1982); Al-Fawaz et al. 2010; Al-Mashari et al. 2006; Barker and Frolick 2003; Bingi et al. 1999; Bradley 2008; Brown and Vessey 1999; Brown and Vessey 2003; Chua and Lim 2009; Chuang and Shaw 2005; Davenport 2000; Dawson and Owens 2008; Esteves and Pastor 2000; Falkowski et al. 1998; Finney and Corbett 2007; Gargeya and Brady 2005; Verville et al. 2005; Wang et al. 2008; Willcocks and Stykes 2000; Wong et al. 2005; Woo 2007; Xu et al. 2002; Yang and Seddon 2004; Zhang et al. 2005
Top management support	Goni, Chofreh and Sahran (2011), Nah, Zuckweiler and Lau (2003), Khong& Richardson (2003), Hamilton (2003), Hammer (1997), Zain (1995), Khan & Martin (1989), Slevin& Pinto (1987), Kerzner (1987), Bessant (1982); Akkermans and van Helden 2002; Al-Fawaz et al. 2010; Al-Mashari et al. 2003; Al-Mashari et al. 2006; Al-Mudimigh 2007; Al-Mudimigh et al. 2001; Brown and Vessey 1999; Brown and Vessey 2003; Buckhout et al. 1999; Chua and Lim 2009; Chuang and Shaw 2005; Chung et al. 2008; Clemons 1998; Davenport 2000; Dawson and Owens 2008; Dezdar and Sulaiman 2009; Dowlatshahi 2005; Ehie and Madsen 2005: Reimers 2003; Remus 2007; Saini and Nigam 2010; Shanks et al. 2000; Skok and Legge 2002; Soja 2008; Somers and Nelson 2001; Somers and Nelson 2003; Somers and Nelson 2004; Sumner 2000; Taube and Gargeya 2005; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Umble et al. 2003; Verville et al. 2005; Wang et al. 2008; Wong et al. 2005; Woo 2007; Yusuf et al. 2004; Zhang et al. 2005
Project schedule and planning	Goni, Chofreh and Sahran (2011), Nah, Zuckweiler and Lau (2003), Zain (1995), Nicholas (1989), Kanter & Kerzner (1987), Slevin& Pinto (1987) Dimitris (2001); Plant and Willcocks 2007; Reimers 2003; Remus 2007; Saini and Nigam 2010; Shanks et al. 2000; Sharif et al. 2005; Soja 2008; Somers and Nelson 2003; Somers and Nelson 2004; Stefanou 1999; Sumner 2000; Sumner and Bradley 2009; Taube and Gargeya 2005; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Verville et al. 2005; Welti 1999; Wong et al. 2005; Woo 2007; Yusuf et al. 2004; Zabjek et al. 2009; Zhang et al. 2005
Appropriate operational technology	Khan & Martin (1989), Slevin& Pinto (1987); Bessant (1982), Power & Dickson (1973); Al-Fawaz et al. 2010; Al-Mashari et al. 2003; Al-Mashari et al. 2006; Doom et al. 2010; Esteves and Pastor 2006; Finney and Corbett 2007; Francoise 2009; Holland and Light 1999a; Ifinedo and Nahar 2007; Ifinedo 2007; Loh and Koh 2004; Nah and Lau 2001; Nah et al. 2003; Nah et al. 2001; Saini and Nigam 2010; Tsai et al. 2010; Woo 2007; Zabjek et al. 2009
Appropriate personnel, skills and expertise	Nah, Zuckweiler and Lau (2003), Khan & Martin (1989), Kanter (1983) Kerzner(1987), Slevin& Pinto (1987), Bessant (1982),Power & Dickson (1973) Al-Fawaz et al. 2010; Al-Mashari et al. 2006; Al-Mudimigh et al. 2001;Davenport 2000; Dowlatshahi 2005; Esteves and Pastor 2000; Gupta 2000; Ifinedo and Nahar 2007; Jafari et al. 2009; Jing and Qiu 2007; Kalling and Selander 2007; Kumar et al. 2003; Lee and Lee 2001; Legare 2002; Mabert et al. 2003; Mandal and Gunasekaran 2003; Muscatello et al. 2003; Noudoostbeni et al. 2009; O'Leary 2000; Osman et al. 2006; Plant and Willcocks 2007; Rao 2000; Remus 2007; Robey et al. 2002; Saini and Nigam 2010; Shanks et al. 2000; Soja 2008; Somers and Nelson 2004; Sumner 2000; Sumner and Bradley 2009; Trimmer et al. 2002; Tsai et al. 2004; Umble et al. 2003; Welti 1999; Wong et al. 2005; Woo 2007; Yusuf et al. 2004
Strong control system, monitoring and feedback	Goni, Chofreh and Sahran (2011), Zain (1995), Nicholas (1989), Kanter (1983), Kerzner (1987), Slevin& Pinto (1987), Bessant (1982), Power & Dickson (1973); Al-Fawaz et al. 2010; Al-Mashari 2003; Al-Mashari et al. 2003; Al-Mudimigh et al. 2001; Bradley 2008; Dowlatshahi 2005; Falkowski et al. 1998; Francoise 2009; Garcia-Sanchez and Perez-Bernal 2007; Holland and Light 1999a; Kansal 2007; Loh and Koh 2004; Mabert et al. 2003; Murray and Coffin 2001; Nah and Lau 2001; Nah et al. 2003; Nah et al. 2001; Nguyen et al. 2008; Olson and Zhao 2007; Remus 2007; Soja 2008; Tsai et al. 2004; Umble et al. 2003; Welti 1999; Woo 2007; Yusuf et al. 2004
User acceptance	Goni, Chofreh and Sahran (2011), Nah, Zuckweiler and Lau (2003), Hammer (1997) Volkoff (1999) Zain (1995), Slevin& Pinto (1987) Laughlin (1999) Markus (1999) Al-Fawaz et al. 2010; Barker and Frolick 2003; Bhatti 2005; Davenport 2000; Dowlatshahi 2005; Esteves and Pastor 2000; Francoise 2009; Garcia-Sanchez and Perez-Bernal 2007; Gefen 2002; Holland and Light 1999; Holland and Light 1999a; Kansal 2007; Lee and Lee 2001; Olson and Zhao 2007; Plant and Willcocks 2007; Remus 2007; Skok and Legge 2002; Somers and Nelson 2003; Somers and Nelson 2004; Verville et al. 2005; Woo 2007; Yusuf et al. 2004
Crisis management	Slevin& Pinto (1987) Akkermans and van Helden 2002; Al-Fawaz et al. 2010; Al-Mashari et al. 2003; Al-Mashari et al. 2006; Al-Mudimigh 2007; Al-Mudimigh et al. 2001; Brown and Vessey 1999; Brown and Vessey 2003; Buckhout et al. 1999; Chua and Lim 2009; Chuang and Shaw 2005; Chung et al. 2008; Somers and Nelson 2003; Somers and Nelson 2004; Sumner 2000; Taube and Gargeya 2005; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Umble et al. 2003; Verville et al. 2005; Wang et al. 2008; Wong et al. 2005; Woo 2007; Yusuf et al. 2004
Strong project communication	Goni, Chofreh and Sahran (2011), Nah, Zuckweiler and Lau (2003), Khong& Richardson (2003), Zain (1995), Nicholas (1989), Slevin& Pinto (1987), Bessant (1982); Mathrani and Viehland 2010; Murray and Coffin 2001; Nah and Delgado 2006; Nah et al. 2001; Nah et al. 2003; Ngai et al. 2008; Noudoostbeni et al. 2009; O'Leary 2000; O'Leary 2000; Osman et al. 2006; Parr et al. 1999; Plant and Willcocks 2007; Reimers 2003; Remus 2007; Saini and Nigam 2010; Shanks et al. 2000; Sharif et al. 2005; Soja 2008; Somers and Nelson 2003; Somers and Nelson 2004; Stefanou 1999; Sumner 2000; Sumner and Bradley 2009; Taube and Gargeya 2005; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Verville et al. 2005

Table 2.1 *(Continued)*

User participation	Goni, Chofreh and Sahran (2011), Zain (1995), Nicholas (1989), Khan & Martin (1989), Power & Dickson (1973); Nah, Zuckweiler and Lau (2003), Hammer (1997) Volkoff (1999) Zain (1995), Slevin& Pinto (1987) Laughlin (1999) Markus (1999) Al-Fawaz et al. 2010; Barker and Frolick 2003; Bhatti 2005; Davenport 2000; Dowlatshahi 2005; Esteves and Pastor 2000; Francoise 2009; Garcia-Sanchez and Perez-Bernal 2007; Gefen 2002; Holland and Light 1999; Holland and Light 1999a; Kansal 2007; Lee and Lee 2001
Change management	Goni, Chofreh and Sahran (2011), Al-Fawaz et al. 2010; Allen et al. 2002; Al-Mashari et al. 2003; Al-Mudimigh 2007; Brown and Vessey 1999; Brown and Vessey 2003; Buckhout et al. 1999; Buonanno et al. 2005; Davenport 2000; Esteves and Pastor 2000; Francoise 2009; Gunson and de Blasis 2001; Hong and Kim 2002; Huang and Palvia 2001; Ifinedo and Nahar 2007; Kalling and Selander 2007; Kamhawi 2007; Legare 2002; Nah et al. 2007; Nah et al. 2001; Ngai et al. 2008; Olson and Zhao 2007; Plant and Willcocks 2007; Remus 2007; Skok and Legge 2002; Soja 2008; Somers and Nelson 2004; Sumner 2000; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Verville et al. 2005; Wong et al. 2005; Woo 2007; Yusuf et al. 2004; Zhang et al. 2005Khong& Richardson (2003), Kerzner Power & Dickson (1973)
Organizational fit and adaptability	Goni, Chofreh and Sahran (2011), Zain (1995), Kerzner (1987), Bessant (1982), Soh, Kien& Yap (2000); Al-Fawaz et al. 2010; Allen et al. 2002; Al-Mashari et al. 2003; Al-Mudimigh 2007; Brown and Vessey 1999; Brown and Vessey 2003; Buckhout et al. 1999; Buonanno et al. 2005; Davenport 2000; Esteves and Pastor 2000; Francoise 2009; Gunson and de Blasis 2001; Hong and Kim 2002; Huang and Palvia 2001; Ifinedo and Nahar 2007; Kalling and Selander 2007; Kamhawi 2007; Legare 2002; Nah et al. 2007; Nah et al. 2001; Ngai et al. 2008; Olson and Zhao 2007; Plant and Willcocks 2007; Remus 2007; Skok and Legge 2002; Soja 2008; Somers and Nelson 2004; Sumner 2000; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Verville et al. 2005; Wong et al. 2005; Woo 2007; Yusuf et al. 2004; Zhang et al. 2005
Human motivation, support and consideration	Goni, Chofreh and Sahran (2011), Cindy (2000), Khan & Martin (1989); 2003; Remus 2007; Saini and Nigam 2010; Shanks et al. 2000; Skok and Legge 2002; Soja 2008; Somers and Nelson 2001; Somers and Nelson 2003; Somers and Nelson 2004; Sumner 2000; Taube and Gargeya 2005; Trimmer and Wiggins 2002; Tsai et al. 2004; Umble et al. 2003; Umble et al. 2003; Akkermans and van Helden 2002; Al-Fawaz et al. 2010; Al-Mashari et al. 2003; Al-Mashari et al. 2006; Al-Mudimigh 2007; Al-Mudimigh et al. 2001
Progressive corporate culture and work climate	Goni, Chofreh and Sahran (2011), Akkermans and van-Helden 2002; Al-Fawaz et al. 2010; Al-Mashari et al. 2003; Al-Mudimigh et al. 2001; Al-Mudimigh et al. 2003; Esteves and Pastor 2000; Sanchez and Bernal 2007; Gargeyaand Brady 2005; Holland and Light 1999a; Hong and Kim 2002; Jafari et al. 2009; Kamawi 2007; King and Burgess 2006; Lam 2005; Lee and Lee 2001; Motwani et al. 2005; Muscatello and Chen 2008; Nah and Delgado 2006; Osman et al. 2006; Plant and Willcocks 2007; Remus 2007; Sharif et al. 2005; Soja 2008; Somers and Nelson 2003; Somers and Nelson 2004; Taube and Gargeya 2005; Umble et al. 2003; Verville et al. 2005; Wong et al. 2005; Woo 2007; Wu and Wang 2007 Zain (1995), Khan & Martin (1989), Rosenbloom & Abernathy (1982), Ekvall&Tangeberg (1986) & Howell &Higgin (1990); Bradford and Florin 2003; Buonanno et al. 2005; Chan 2008; Davenport 2000; Holland and Light 1999b; Hsiao et al. 2007; Huang and Palvia 2001; Hung et al. 2004; Koh and Saad 2006; Lee and Myers 2004; Mabert et al. 2003; Raymond et al. 2006; Santamar´ıa et al. 2010; Seethamraju and Seethamraju 2008; Tsai et al. 2010; Umble et al. 2003; Verville et al. 2002; Wu and Wang 2007; Zhang et al. 2005
Environment	Bradford and Florin 2003; Buonanno et al. 2005; Chan 2008; Davenport 2000; Holland and Light 1999b; Hsiao et al. 2007; Huang and Palvia 2001; Hung et al. 2004; Koh and Saad 2006; Lee and Myers 2004; Mabert et al. 2003; Raymond et al. 2006; Santamar´ıa et al. 2010; Seethamraju and Seethamraju 2008; Shanks et al. 2000; Stafyla and Stefanou 2000; Stefanou 2001; Tsai et al. 2010; Umble et al. 2003; Verville et al. 2002; Wu and Wang 2007; Zhang et al. 2005;

Hence, there is a well-established and strong accord among the various researches regarding the CSFs in the implementation of ERP.In a recent development Goni, Chofreh, and Sahran (2011) proposed eighteen CSFs for Malaysia SMEs from questionnaires distributed to experts that have implemented ERP in their plants. The critical success factors includes (1) Vendor Support, (2) Clear Understanding of Strategic Goals and Objectives, (3) Suitability of Software and Hardware, (4) ERP Teamwork and Composition, (5) Communication, (6) Educational Level, (7) Effective Project Management, (8) Project Team Competence, (9) Project Champion, (10) Change management, (11) Cooperation, (12) User Involvement, (13) Organizational Culture, (14) Top Management Commitment and Support (15) Data Accuracy and Data Quality, (16) Monitor and Evaluation of Performance, (17) Testing and Troubleshooting, (18) IT Staff Support. However, it had been argued by Ganesh and Mehta (2011) that for a flexible and efficient CSFs formulation there is need to consider the option of all stakeholders. They stressed that the inputs of all stakeholder can target a more successful and effective ERP implementation. Hence there is still need to explore these CSFs as presented by Goni et al. (2011) in Malaysia SMEs whereas not only expert view will be considered but other stakeholders (like user, customer, managers etc.) shall be involved too. This study shall explore CSFs for ERP implementation in Malaysia SEs. The CSFs shall be gotten from various business stakeholder contributions.

2.5 ERP implementation Critical Failure Factor (CFF)

There have being a growing knowledge and understanding about ERP CSFs, however ERP implementation still experience crunch. This might be due to confusion about the practicality of ERP implementation or due to oversight of major failure factors (Noudoostbeni & Ismail, 2010; Miranda, 1999). The major issue is that why does ERP implementation fail? Failure

can be defined as an implementation which is unable to give sufficient Investment on Return (ROI). It is a state that occurs when the set or defined business objectives are not met. Failure rate was put at 60 – 90% according to Ganesh and Mehta (2010). Failures can be seen from unmet business expectation, surpass budget and lagging project schedule or completion.

In a survey conducted by Umble and Umble (2002); information technology managers classified ERP failure into three main group; insufficient planning or poor management (77%), lack of business operational management base (73%) and change in business vision, plan and goals during the project (75%). Correspondingly, ERP implementation rate of failure are seen high. The resultant of this is detrimental to business.

This detrimental to business would cause companies to spend thousands of ringgits and many years trying to implement ERP solutions to their business. Once the project starts it is very difficult to discontinue due to investment committed on the project. Also due to changes that had been effected in such business; it might be practically difficult to undo these changes that ERP had impacted on the business (Al-Mashari, Al-Mudimigh&Zairi, 2003). In most cases business that experienced failure does not only lose capital investment (like expenses on consultants and procurement) but also essential part of their business might be affected. Hence, taking precautions on failure factors in implementing ERP should be a careful exercise that involves strategic planning, precision decision making and proper negotiations with relevant experts (Gargeya& Brady 2005).

For instance, a study conducted by an independent research organization known as The Conference Board showed that 40% of their respondents failed to accomplish their defined company objectives after one year of ERP implementation(Enterprise resource implementation still tough, 2001). It was also indicated that it took close to twelve months

longer than expected to go live due to unforeseen situation that affected the implementation which surfaced during the installation process.

In another example, Botta-Genoulaz, Millet and Grabot (2005) argued that ERP implementation fails in manufacturing sector due to focused on traditional inventory control concept. They discovered that ERP failed due to the implementation to cover both tangible and intangible related functions. Consequently, ERP implementation requires the preparation of the business workforce (corporate culture), company process (organizational fit) and preparation of technical system (legacy systems), project management and change management competencies (Farshad, et al., 2006). It is indeed vital for companies to have a defined target, focus and objectives before embarking on ERP implementation to scope it wide application to the need of the company. This is because companies that do not have a defined objective, target and scope in their business management usually possess high rate of failure in ERP implementation (He, 2006).

Corresponding, Donovan (2001) identified five CFFs that result into ERP implementations failure as wrong implementation strategies, lagging time frame, poor planning, organization fit and surplus budgeting. These factors determine how successful ERP implementation can be achieved within the shortest time frame. The success of ERP implementation depends on the time frame to achieve returns on the benefits of the software (Al-Sehali, 2000)

Similarly, Themistocleous, Irani, O'Keefe and Paul, (2001) identified conflict with consultants as the major CFF that hamper ERP implementation. The benefits of consultant to business are enormous (like provision of specialized skills, experience and helping with needs) however; it can also be time-consuming and expensive causing delay for projects execution (Gable, 2003).Whenever there is a conflict between the business managers and the consultant, failure or delay is the resultant outcome.

Likewise, Umble, Haft and Umble, (2003) argued that mismatch between ERP and organization is the major CFF that causes ERP implementation failure. Business goes for ERP for the sake of profitability and operational improvement. This usually results to greater customization of ERP which leads to complexity in implementation. Mismatch can be classified into business function, data and output (Soh, Kien, & Tay-Yap, 2000). Thus systematic evaluation and selection of ERP is needed to ensure that there is reduction in the potential risk of mismatch which can hamper implementation.

Therefore, it is vital for businesses to be aware of these crucial factors before embarking on ERP implementation. Cautious consideration of these crucial factors shall ensure smooth and efficient implementation and realization of full potential advantageous ERP solution. Hence this study explored CFFs that can hamper ERP implementation in SMEs from Malaysia perspective.

2.6 ERP Implementation and Malaysia SMEs

SME is the backbone of economic revolution for any developing countries. SMEs out numbers LEs by a wide margin and also employs many more people (Narula, 2004). That is why SMEs is referred to as the driver of a nation economic. It is responsible for driving innovation and competition in many economic sectors of a country.

In Malaysia, SMEs plays a vital role in the economic sector by supporting not only the nation economy but also provision of employment for the immense unskilled population. Given the fact that majority of businesses in Malaysia are SMEs, these SMEs have been the source of strength of Malaysia's industrial base. It also provides the necessary support for industries in Malaysia which will make them to develop across economic sectors.

Interestingly, there is no consistent definition of SMEs in the world in general and Malaysia in particular. In July 2011, the European Commission tried to propose a definition for SME. The commission group up enterprises which employ fewer than 250 workers and should be having an annual turnover not surpassing 50 million euro (Lukács, 2005). Similarly, Small and Medium Industries Development Corporation (SMIDEC) explained SME as enterprises with yearly sales in turnover not more than RM25 millions. The enterprises usually have staff strength not more than 150. Likewise, Bank Negara Malaysia (Central Bank Malaysia) equally explained SMEs as enterprises with than RM10 million from shareholders' funds (NSDC, 2005). Thus, this study shall employ the combination of definitions of SMIDEC and Bank Negara Malaysia. SME is made up of enterprises with staff strength not more than 150 and annual profit less than RM 10 million.

As SMEs is backbone and driver of a nation economic, so also improvement in SMEs has direct effect on a nation economic. One of such innovation that can bring about this improvement is ERP. Most especially in the region of Asia-Pacific there is a global expansion in the implementation of ERP in SMEs for the development of the region. In year 2007 only, the Asia-Pacific made 40% of the total ERP market while Malaysia having less than 5% (The IMD, 2009). There is a great expectation from Malaysia as its market shifts from customized local system usage to integrated packaged system.

In 2009, the International Institute for Management Development (IMD, 2009) predicted double increase in the sale of ERP software in Malaysia. This is due to positive organization culture, strong service sector and enable government policies that is creating a flourish environment for the expansion of SMEs. Economic expansion in Malaysia is the root cause of grow in ERP market.

Similarly, Malaysia government policies for SMEs enable this positive environment by the Ministry of International Trade and Industry (MITI) making available financial aid scheme as Grant for ICT application and soft loan for SMEs. Allocations of these grants are under the distribution of the Small and Medium Industries Development Corporation (SMIDEC). These financial aids were meant to improve competitiveness, productivity and efficiency.

Although Malaysia economic is indicating a growing market for ERP and government is making lots of efforts in creating an enabling environment for such. Also ERP has been recognized as a useful tool for business transformation however, in practice, there are many difficulties in motivating people to implement it effectively in Malaysia SMEs (Goni, Chofreh, & Sahran, 2011). This difficulty is due to the complexity, extensive, lengthy and costly process nature of ERP implementation. Consequently, there is high failure rate and abandonment particularly among Malaysia SMEs.

Despite the evidence that ERP is playing a vital role in the economic and global expansion markets in the USA and Europe but a little role is observed in Asia and particularly Malaysia (Goni, Chofreh, & Sahran, 2011). Indeed, developing countries which include Malaysia however are yet to share in the advantages of the ever expanding globalization marketplace. Penetrating the global market has been a major issue due to the need to advance in technological technique to enhance cheaper products especially within the manufacturing companies (Jafari, Osman, Yusuff, & Tang, 2006). Thus, there is a vital need for all businesses in Malaysia to implement ERP to cut costs, achieve operation efficiency and competes with the world globalization market. Thus, this study attempts to explore ERP implementation framework for SMEs from Malaysia's perspective. Further, the findings from this study will enlarge the scope of ERP implementation for Malaysia local SEs

2.7 Theoretical Underpinning

This study will make use of one theory and one model as theoretical underpinning to further understand the concept of the research. Agency Theory (Jensen & Meckling, 1976) and DeLone and McLean Model (2003; 2002; 1992) will be used to provide theoretical foundation for the study due to their wide usage in many information system framework developments and research particularly in ERP researches.

2.7.1 The Delone and Mclean Model

This model was proposed by DeLone and McLean in 1992 based on their critical examination of existing Information System success definition and corresponding measurements. They classified the model into six major categories as show in Figure 2.3. Consequently, it was proposed that there is a multidimensional measuring relationship with interdependencies between the six different success categories.

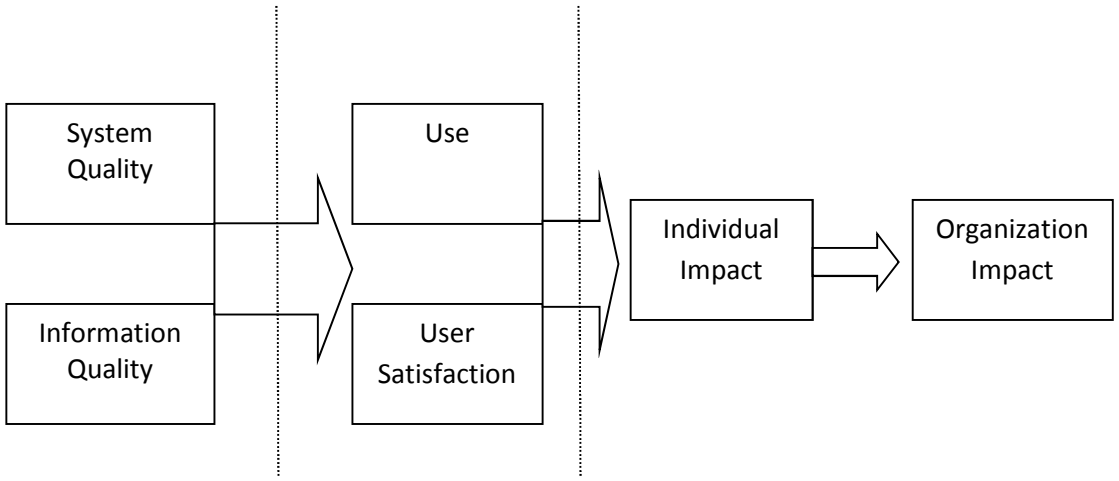

Figure 2.3
Information System Success Model
Source:Urbach& Müller (2012)

However, this model was further researched by many scholars, which led to the updated vision after ten years of the publication of the first model as shows in Figure 2.4. The updated model is made up of six interrelated dimensions namely system, information and service quality, user satisfaction, use (intention to) and net benefits. The relationship between the success dimensions is shown with an arrow.

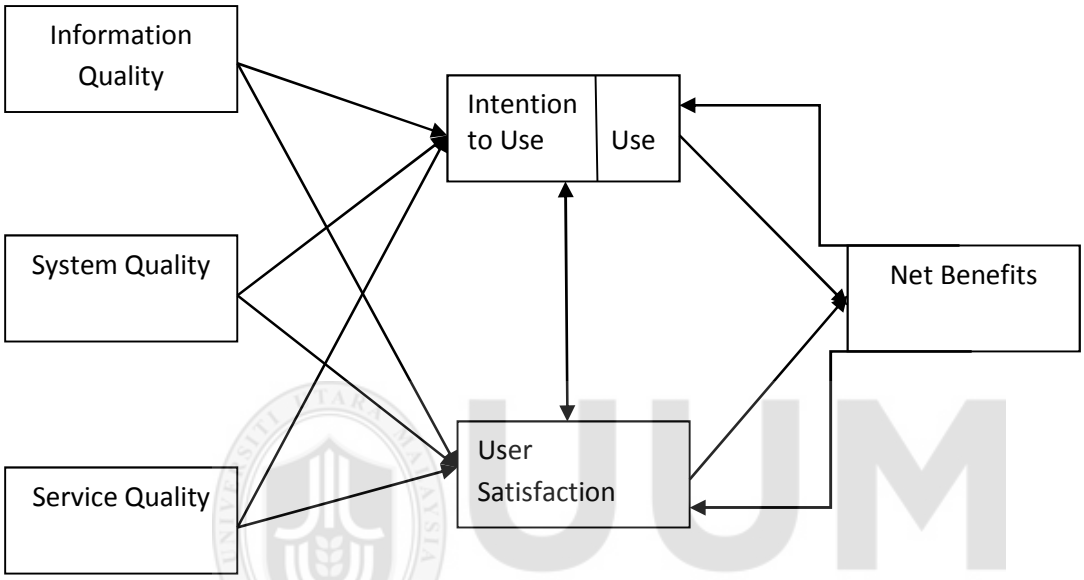

Figure 2.4
UpdatedInformation System Success Model
Source:*DeLone& McLean (2002; 2003)*

Thus, ERP implementation can be appraised in terms of system, information and service quality; these charactershave a subsequent effect on the intention to use or the use and user satisfaction. Consequently, using ERP will enhance certain gain. This gain is the net benefits that will (positively or negatively) persuade user satisfaction on continuous usage of the system. Similarly, net benefits can be viewed based on DeLone and McLean model (1992) as individual (user) and organizational impact. Organizational impact will involve the nature, culture and traditions of the company implementing the ERP. Hence, organization culture is a factor to be considered in implementing ERP. Many previous ERP studies (Petter, DeLone

&McLean, 2008; Fan & Fang, 2006; King & Burgess, 2006; Xue, Y., Liang, Boulton & Snyder, 2005; Zhang, Lee, Zhang & Banerjee, 2003) have used this model in assessing ERP empirically. Bento and Costa (2013) gave a detailed explanation on the usage of the model in ERP researches. Therefore, this study referredto this model in explaining ERP implementation framework for Malaysia SME.

2.7.2 Agency Theory

Vendor relationship management is extremely important for organizations to achieve both short- and long-term ERP project success. The need for organization to identity factors that drive successful ERP implementation is vital. One of such factors is the continuous interaction between the implementation consultants and the organization. Agency theory has been successfully used by different researchers in ERP implementation to explain relationships between organization management and ERP project consultants. For instance, Jensen and Meckling (1976) used the theory of agency to address contracts related issues by which an agent's performance standard can be determined, measured and incentivized so that the agent can operate within the principal's interests. According to Basu and Lederer (2011) agency theory explores the problem arising from parties' cooperation in terms of different attitudes toward risk and goals. The theory depicts the atmosphere within a party or between parties in terms of contracts where one party (the principal) engages another party (the agent) to perform a service on the former's behalf with the delegation of some decision making authority to the latter (Wier, Hunton, & HassabElnaby, 2007)

Therefore, Agency theory can be used to explain ERP implementation failure especially with issues of management and consultants disputes (Basu & Lederer, 2011; Jasperson, Carter, & Zmud, 2005). For instance, Basu and Lederer (2011) gave the explanation that ERP client

(i.e., the principal) may choose to pre-qualify potential ERP consultants (i.e., the agent) by reviewing their résumés and interviewing them carefully, superficially, or not at all. Meticulous pre-qualifying, according to agency theory, would reduce the possibility of accepting less qualified consultants (i.e., adverse selection). Hence, less qualified consultants would do poorer work and thus ERP implementation would more likely fail. Therefore, this study will make use of this theory to better understand ERP implementation framework.

2.8 ChapterSummary

This chapter explores in details definitions and understanding of ERP and its implementation concepts. It examined the influence of CSF & CFF on ERP implementation as it relates with Malaysia SMEs. Thus, this chapter provides a theoretical understanding on which ERP implementation framework can be developed based on Malaysia perspective while chapter three shall explore the research methodology for this purpose.

CHAPTER THREE
METHODOLOGY

3.1 Overview

In this chapter, the methodology and procedures used to conduct this study are described. Qualitative research method using face to face in-depth interview will be utilized for data collection. The collection will serve to capture pertinent information as provided by ERP implementation consultants and all stakeholders (IT personnel, ERP users, suppliers, management and customers) in Malaysia SMEs. Literature review and expert opinions will be used for identification of critical success and failure factors. Data collections will be done by interview sessions. The results gotten from data collection sessions will be used to develop the proposed framework. The outcome of this chapter will discuss how the four research questions can be answered. A well description of the study population, study location and study sample will be done. More importantly, a concise explanation will be made on method of data collection and data analysis to answer all the study questions.

3.2 Research Paradigm

There is variety of research methods available to researchers. Indeed, McGrath (1981) classified research methods into eight primary types with three areas of maximum concern or focus. Obviously, not all of these research methods are appropriate for every study, so there is need to select the ones which are most suitable. Considering the nature of the study, qualitative approach was considered appropriate. Other research approaches, such as experiments and case study, will not be employed for this study because of the need to critically understand the core phenomena with ERP implementation in SME. Although, quantitative approach can also be considered suitable for the study however, due to the

exploratory nature of this research,qualitative approach is considered the most applicable (Creswell, 2012). Qualitative approach places emphasis on understanding through looking closely at respondent's words, actions and records whereas quantitative approach to research looks past these words, actions and records and is look concern with their mathematical significance and relationship. This is the reason why Creswell (2012) defines qualitative study as an inquiry process of understanding a social or human problem, based on building a complex, formed with words, holistic picture, reporting detailed views of respondents, and conducted in a natural setting. Hence, this study employed qualitative research approach for its data collection.

Similarly, the use of multiple methods to study the same phenomenon, often referred to as triangulation, provides multiple perspectives, and can often result in more useful and applicable studies (Mangan, Lalwani, & Gardner, 2004; Modell, 2005; Perlesz & Lindsay, 2003). However, Creswell (2012) argued in a single perspective study where only one research method is used then there must be multiple respondents' to obtain triangulation. Therefore, this study made use of all stakeholders as research respondents to ensure triangulation.

3.3 Research Framework

The primary objective of this study is to develop ERP implementation framework based on Malaysia SMEs perspective. Another objective of this research is to provide a well description and explanation of the phenomenon of critical success factors and critical failure factors as it influence Malaysia SMEs from successful and efficient implementation. To answer the research questions for this study, Figure 3.1 shows the research framework employed as a methodological procedure in this study.

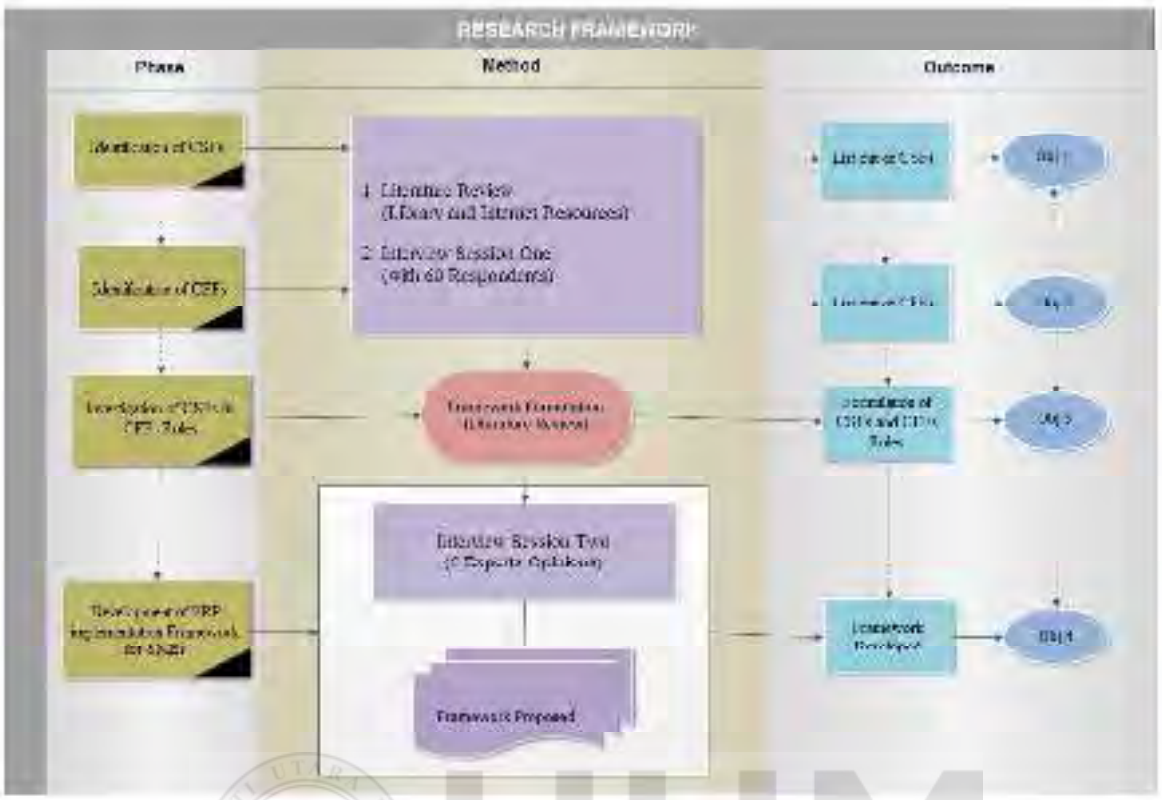

Figure 3.1
Research Framework

The study framework has four phases namely identification of CSFs, identification of CFFs, investigate of CSFs and CFFs roles and development of ERP implementation framework. Each of these four phases is met to achieve the four stated objectives in Chapter One. The first two phases are met to identify CSFs and CFFs which are achieved by employing both literature review and interview session (which is the first interview session in this study). The literature review is done by using both library and internet resources while the first interview session (Interview Session One) is achieved with thestudy respondents. The outcomes of the first two phases provided answers to the first two study objectives as stated in Chapter One. The third phase is the investigation of CSFs and CFFs roles which is done by exploring the literature using both library and internet resources. The outcome of the third phase is the formulated CSFs and CFFs role. The combination of the first three phases provided an initial ERP implementation Framework for SMEs which was subjected to expert opinions. The

experts were made-up of five PhD holders in the domains of ERP and SMEs with over 12 years working experiences. The reviewed framework by the expert produces the proposed ERP implementation Framework for SMEs which is the fourth study objective.

3.4 Population and Sampling

This study focuses on Small and Medium Enterprises in Northern States of Malaysia whereas the list of names and addresses of the small-medium enterprises (SMEs) are gotten from the Ministry of Entrepreneur Development (MED) databases comprised the population frame for this study. The Ministry of Entrepreneur Development (MED)was recently re-introduced by the new Government on 2 July 2018. The Ministry was known as Ministry of Domestic Trade, Co-operatives and Consumerism (MDTCC) and Ministry of Entrepreneur andCooperative Development (MECD) by previous Government. Based on MED databases, there are 907,065 establishments whereas Northern Malaysia makes-up to 21.9% as shows in the diagram below Figure 3.2

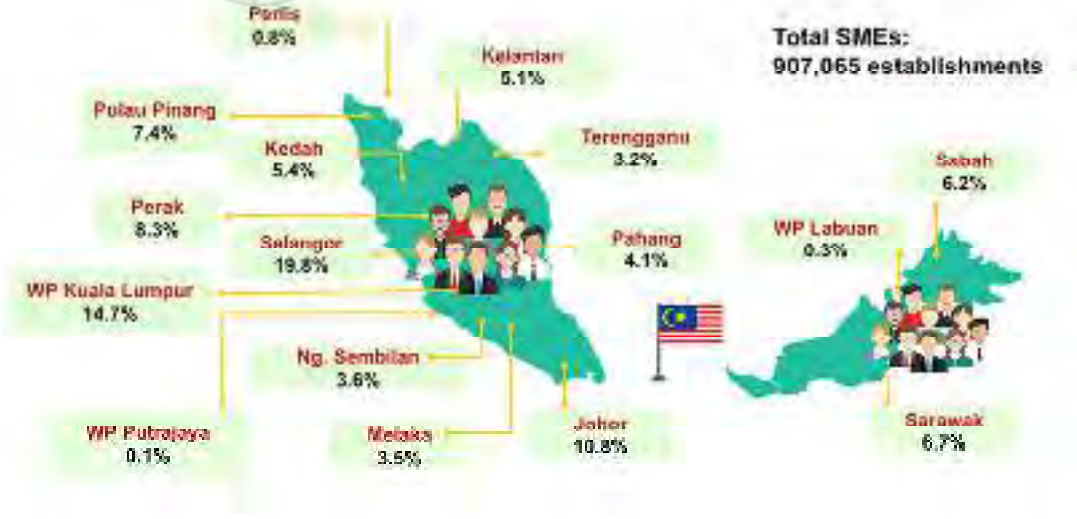

Figure 3.2
Overview of SMEs in Malaysia by State

From the MED databases, listed companies in the Northern States in Malaysia which are Kedah, Perlis, Perak and Penang were selected as the study respondents. Simple random sampling was used to extract 12 SMEs in the region based on Mason (2010) and Guest, Bunce and Johnson (2006) suggestions. Whereas, only companies registered with the Malaysia government and those to have implemented and integrated some forms of ERP were selected. This guide was used in the selection of respondent companies with the following guidelines:

1. Only registered company with SMEs Corporation Malaysia and Malaysia government will be considered.
2. Company must have implemented and integrated ERP system in her operation whereas the type of ERP implemented will not be considered in this study. However, the numbers of modules implemented in their operations will be noted.
3. Company that engaged recognized ERP supplier and consultant for their ERP implementation and integration will be considered.
4. Company with staff size between 10 - 250 employee

However, companies' nature of business was not considered as bases of selection of samples.

3.5 Unit of Analysis of the study

The study unit of analysis is based onindividual in the 12 selected SMEs (as presented in Section 3.4). This study selected 60 individual who served as the study respondents based on Purposive sampling method. These 60 study respondents were identified on the basis of their job title and position ranging from I.T Personnel, ERP Constants/ Project Manager, ERP Users, Top Management and Customer. They are assumed to be knowledgeable and familiar with the operations related to ERP implementation in their respective companies. The rationale behind involving the five different groups of I.T Personnel, ERP Constants/ Project

Manager, ERP Users, Top Management and Customer as the study respondents is to ensure that all ERP stakeholders were considered in the study.

3.6Instrumentation

This study instrument is based on Gable et al. (2003) and Yeh, Yang and Lin (2007) which is underpinned by DeLone and McLean (2003; 2002). Information quality, system quality, satisfaction and organizational impact measurements will be based on Gable et al. (2003) while service quality measurement will be based on Yeh, Yang and Lin (2007). Thus, this study will make use of five dimensions measurement namely information quality, system quality, service quality, satisfaction and organizational impact. The five dimensions measurement as their corresponding measurement indicators as shows in Figure 3.3

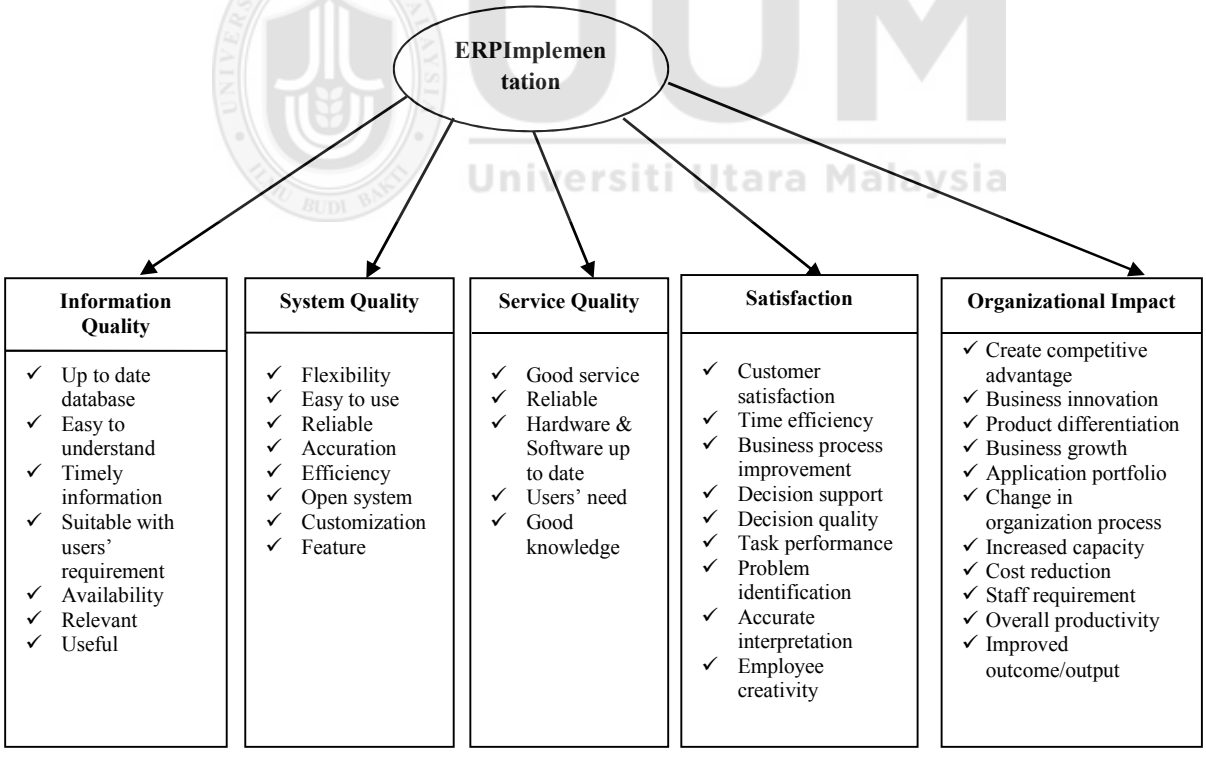

Figure 3.3
Indicator of Successful ERP Implementation (Gable et al., 2003, McLean & DeLone, 2003; 2002)

Additionally, the study used of interview sessions, so that respondents can freely express their view and opinion on the subject matter. Two interview sessions were employed in this study; the first interview questions for the first session were drafted firstly based on literature review. The drafted copy was subjected to review by using expert opinions making up of academicians and ERP consultant. These groups assessed the readability, content and face validity of the questions.Based on critique and recommendations made by these groups, the interview questions were redesigned and modified. Based on these feedbacks, significant effort were made to condense, reword, adjust and integrate the questions until it reached a point all experts agreed that they are logical, comprehensive and understandable. Consequently, the newly drafted questions were sent for final approval and validation purpose to the expert opinion groups. The approved final draft became the study interview questions, which were delivered with a cover letter (Appendix I). As for the second interview session, the interviewees making up of ERP professionals (ERP project consultant, IT department head and academicians) were requested to give comments on the proposed framework which was developed based on literature review and analysis of data from the first interview.

3.7In-Depth Interview Session

The study was made use of qualitative one-on-one in-depth interviews research design. Interview is a means of investigating and gathering the narratives of lived experience of people. In-depth interview is used to gather information about the reasons of some certain phenomenon and occurrence by recreating opinions of events and experiences from experts and professionals that have adequate understanding and knowledge. Boyce and Neale (2006) describe an in-depth interviewing as a technique in research methodology that involves conducting intensive one-on-one interview with a small number of respondents to know their

views on a specific idea, program, or situation. Semi-structured in-depth interviews were used for data collection to determine the various factors that influence ERP implementation in Malaysia SEs. This provided answers to all the study questions.

In-depth interview is also appropriate for this study because it will allow IT/Project managers to share their experience freely and comprehensively on implementation of ERP in their various SEs. According to Gubruim and Holstein (2002), there are three assumptions of traditional interview. The first one is that human being share a common experience; therefore, researchers assume that each person's opinions and perspectives are binding and that interviewing the appropriate numbers of people will elicit the right information and give researchers a broad insight into the phenomenon under study (Marvasti, 2004). Secondly, there are two recognized and active roles between the interviewer and the interviewee. It is a means of developing conversational relationship between both parties on a given topic of discussion which has a high import for research (Marvasti, 2004). The third assumption maintained that interview respondents are seen as a source of answer to the interviewers' questions (Holstein & Gubrium, 1997). Therefore, it is basically assumed that asking the right questions will bring forth the right, required and appropriate answers for the study. Hence, in-depth interview enabled researcher to hold conversations with IT/Project managers on factors affecting successful implementation of ERP in Malaysia SEs.

3.8Interview Protocol

Based on MaCracken (1988) conclusion that in-depth interview allows researcher to gain access into both the mental and physical world of respondents and it is the most suitable instrument to collect analytical, detailed and descriptive data. Hence, in-depth interview will be used in this study. The purpose of the interview session is to enable the collection of rich

and detailed data that will capture in-depth description, understanding, enquiry, meaningful answers, experiences and concise quotations of respondent on the issues surrounding ERP implementation. Thus, this sessionenabled the researcher to answer research questions 1, 2, 3, and 4 as shows in Table 3.1. This helped in the development of an implementation framework of ERP for SMEs.

Crabtree et al (1999) pointed out that sampling is the method of choosing a quota of the population to represent the whole population. This study make used of purposive sampling method to select 5 respondents in each of the 12 companies within the northern region of Malaysia. The 5 respondent will includes IT personnel, ERP consultant/Project Manager, ERP user, Management and Customer. This will allow input from all the stakeholders on ERP implementation. Thus, in order to gather a holistic data a total of 60 respondents were used in this study. However, Cresswell et al (2007) argued that a maximum of 25 respondents is enough for a rigorous qualitative study. Nevertheless, the number of respondents cannot be speculated as the researcher will continue the interview until it reaches the data saturation point, as suggested by Guest, Bunce and Johnson (2006). This is because theoretical saturation has become the gold standard in justifying the sample size in qualitative research (Creswell, 2012; Mason, 2010)

This study used of semi-structured questions and the interview session took place on the date approved by the company and the respondents. A confidential and well-spaced room which was located within the company premises was venue of the interview session. Whereas, the respondent preferred outside the company premises then the researcher enabled that a confidential and well-spaced room is booked for the session. Likewise, the researcher ensured that respondents expressed themselves in any language of their choice. The researcher got the help of a suitable interpreter to assist in the interview session where the spoken English of the interviewees were not too clear (those interviewees were allowed to communicate in their

mother languages). This procedure gave the respondents the opportunity to freely express their opinion on the subject matter. The respondents were informed that the session were recorded both by audio and video means. However, the respondents weremade to understand that their privacy and confidentiality were protected during and after the interview sessions. This was ensured by stopping the recording devices at any point the respondent wishes. Also their name and identity were revealed when reporting the study.

The interview sessions were started with some ice breaking questions to get the respondents familiar with the researcher and the environment as shows in Appendix II part A. The ice breaking questions also built confidence and rapport between the researcher and the respondent. After which the researcher engaged the respondents first with the demographic questions before going to the main interview questions as shows in Appendix II part B. The interview questions reflected the five dimension measurement indicators that were discussed in previous section as shown in Figure 3.2. Each interview questions that were asked the respondent were elicited the respondent's perception on issues surrounding ERP implementation. The interview session with a respondent ran for at least 60 minutes and maximum of two hours. The interview sessions questions were shows in Appendix II while Table 3.1 shows the mapping of the interview sessions questions with study objectives.

Table 3.1
Mapping of Interview Sessions with Study Objective

Method	**Question**	**Objective**
Interview session I	Part C Q1 to Q9	1
Interview session I	Part C Q1 to Q9	2
Interview session I	Part C Q10 to Q13	3
Interview session II	Part D Q1 to Q4	4

3.9Data Collection and Analysis

This study used of semi-structured questions to get information from the respondents. In-depth interview is a popular method in research and it has also been referred to as a method in which the subjects of inquiry in the science research can talk of their own experience through using the mode of expression they know how to use best. The researcher took note and at the same time audio and video record the interview for transcription in English language. The interview transcripts were analysed using thematic analysis. Thematic analysis guided the formation of themes by examining, pinpointing and recording patterns within data. Coding frame was generated based on the study questions, as suggested by Schreier (2012). The interview transcripts were analysed using Nvivo version 9.0 qualitative data software

3.10Reliability and Validity

Expert opinions depicted there were no problems of comprehension and understanding. It ensured that all respondents in the study agreed on the appropriateness and adequateness of the content and clarity of the items in the interview question. This reflected the reasonable level of face validity and content validity of the question. Potential bias and danger from using perception and subjective data instead of facts shall be considered. However, the suggestion of Miller and Roth (1994) on how to minimize bias in the use of subjective data shall be used as guide. They advocated that questions do not require recall from distant past and respondents should be well motivated to provide accurate information.

To encourage accurate response, several researches suggested the use of small gifts in research study (Church, 1993). Porter (2004) recommended that certain individuals perceived interview sessions as a waste of their time. This has caused researchers to find attractive

medium for participation in their research. Porter (2004) suggested offering of incentives as a good way to attract honest participation in research. The inclusion of small, prepaid, monetary incentives, typically in the form of a single one-currency bill increases participant's willingness to provide valuable data (Tourangeau, 2004; Warriner, et al, 1996Church, 1993).

Given these recommendations, this study provides a post feedback gift, promised confidentiality of data and highlighted the usefulness of the study. Hence, the respondents were encouraged to respond as accurately as possible to ensure maximum benefit for their selves and companies. Based on the incentives offered, the study hopes to minimize distortions in subjective data obtained from the respondents.

3.11Ethical Considerations

This study is a very sensitive one because it involves daily operational issues of the I.T department and management decision making on the department. Hence, the researcher ensured that a high ethical standard is achieved. In order to achieve high ethical considerations for this study, some ethical procedures and guidelines were stringently followed. All respondents for this study were duly informed both in writing and verbally. Also, their participation in this study will be on a voluntary basis. Prior to the engagement of respondents in the study, each respondent were provided with a research study information sheet that showed the nature of this research. Also, a participant consent form was signed by each. The potential ethical considerations in this study are: confidentiality of data, issues of confidentiality with publication of the findings, and fairness in the reporting of the findings. All raw information including videos, audios and transcripts will be stored securely for an appropriate period of time.

3.12Framework Development

Based on the outcomes of the interview sessions, review was be made to the proposed framework as explained under research framework in Section 3.3. The reviews highlighted the perspective of all interviewed stakeholders within Malaysia SMEs. Adjustment was made to critical areas of concern by stakeholders to strengthen the framework.

3.13ChapterSummary

This chapter presented a detailed and rigorous research methodology that shall be employed for this study. The development, modification, and validation of the implementation framework have been extensively discussed in this chapter. Also reliability and validity for common method bias were discussed. The target population, the qualitative approach method, and the sample selection procedure have been described. The methods and procedures used in data collection and analyses to answer all the study questions were extensively explained.Table 3.2 maps the summary of the study objectives, method and expected outcome.

Table 3.2
Mapping of Study Objectives, Methods and Outcome

s/n	Objective	Method	Outcome
1	Identify CSFs	Literature Review& Interview Session I	List out of CSFs
2	Identify CFFs	Literature Review& Interview Session I	List out of CFFs
3	Investigate the Role of CSFs & CFFs	Interview Session I	Formulation of the relationships
4	Developing ERP implementation Framework for SMEs	Literature Review &Expert Opinion (Interview Session II)	Framework

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

This chapter presents the result of the analysed qualitative data collection approach based on successive in-depth interviews conducted on sixty respondents from twelve SMEs companies within the northern region of Malaysia. The chapter is divided into six sections where Section 4.1 highlights the study's interviewers' demographic information. Section 4.2 to 4.5 presents the study findings and results based on analysed data. Framework implementation detail is presented in Section 4.6 and Section 4.7 showcased the framework validation as related to experts result whereas the chapter cap-ups with chapter summary in Section 4.8.

4.1 Respondent (RP) Background

For interview session I as shown in Figure 3.3, the study made use of sixty respondents from five positions such as I.T personnel, ERP constants/Project Manager, ERP users, top management and customer from twelve different companies within northern region of Malaysia. The twelve companies consist of three companies from four different states within Malaysia northern region namely Perlis, Kedah, Penang, and Perak. The rationale for this is to afford the opportunity to get reliable information from all perspectives on the subject matter. Accordingly, the study respondents are made up of I.T personnel, ERP constants/Project Manager, ERP users, top management and customer.

From the sixty study's respondents, it was noticed that the number of the male respondents were more than the females personnel. The gender disparity of 60% to 40% ratio of male to female respondents was observed. This depicts that most SMEs assigned key personnel positions to males compared with females on ERP administration. In addition, most of the

respondents are first degree (BSc) holders making 90% while the other 10% are second degree (Masters) holders. This depicts that majority of the study respondents are educated and knowledgeable on the subject matter.

4.2 Result of Critical Success Factors (CSF)

Generally, CSFs are those identified important few factors that ensure success for the implementation of ERP in an organization and, therefore, those factors represent the success pivot that implementation depends on. This study identified eight CSFs that are vital for the successful implementation of ERP in SMEs. These vital CSFs are categorized into two sub-themes namely enhanced data processing and expansion. These two sub-themes are summarized in Figure 4.1 which are further details discussed in the following subsections.

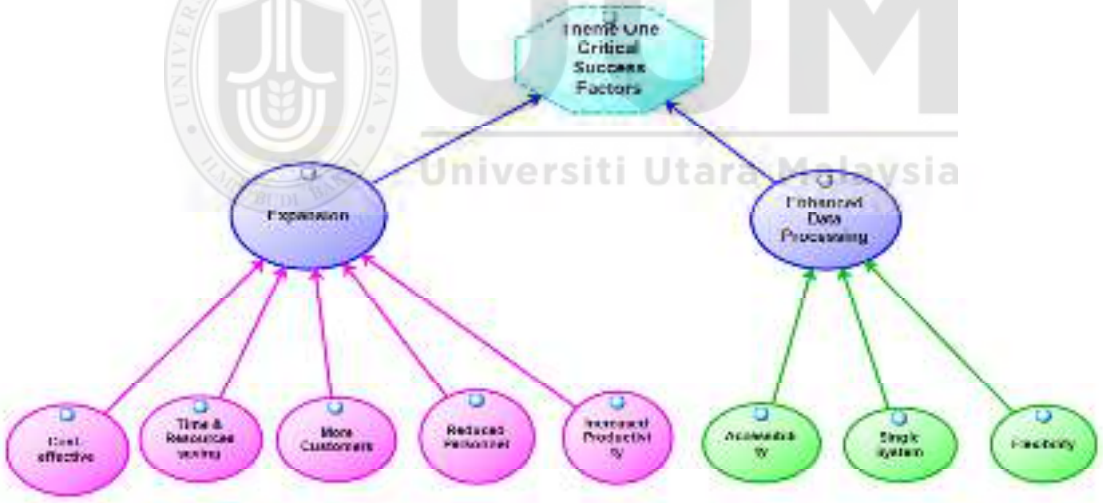

Figure 4.1
CSFs in SMEs for ERP Implementation

4.2.1 Enhanced Data Processing

The first category of critical success factors is classified under enhanced data processing factor. An enhanced data processing depicts the situation where all the ERP implementation

items (either in data or information forms) are meaningful and useful for the target purposes. The processes involved in this enhanced data processing are usually manual (without the use of a computer), automatic (with the use of computers without intelligent) and electronic (with the use of computers with artificial intelligent). For this enhance data processing to be achieved, this study identified three vital factors that are critical which are namely accessibility, flexibility, and simple system as illustrated in Figure 4.2

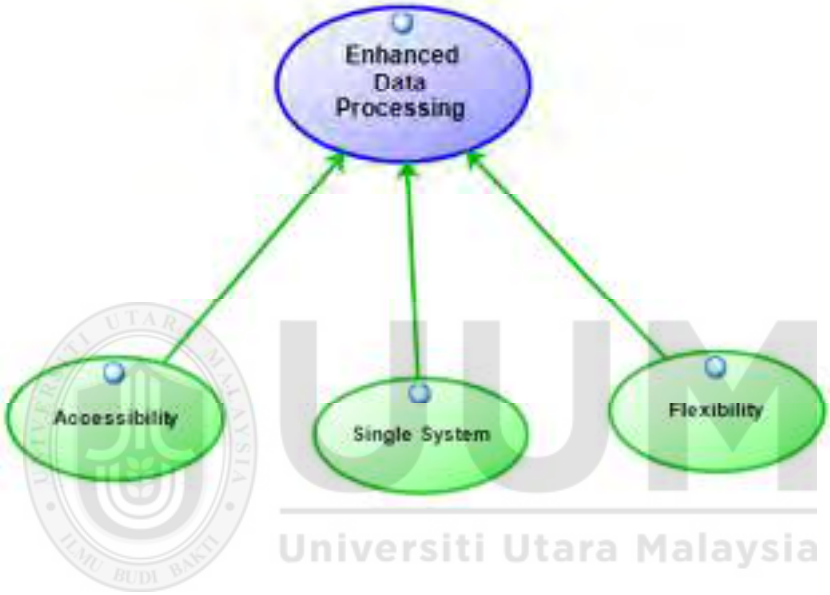

Figure 4.2
Enhanced Data Processing Factors

These three identified factors were pinpointed by most respondents and are further discussed in following subsections.

4.2.1.1 Accessibility

Data accessibility refers to the need to have plans and activities that will ensure adequate storage, retrieve and usage of data and information during and after the implementation of ERP. This view was expressed by one of the top management respondents that:

> "One unique pain in ERP implementation is data accessibility. This is because our business data is very important to us and we cannot afford to lose it. Losing of data will result in losing of thousand ringgits for us" (RP 15).

This similar view was expressed by one of the user respondents that:

> "To us as ERP user, the most vital issue is the access to the same information that is needed for our daily business operations. We intend to have almost instantaneously accessibility to the business data which should be through one unified user interface that will be easy and convenient to our business operations" (RP 3).

Besides, one of the ERP project managers similarly pointed out that "data accessibility is vital for the smooth running operation of any ERP implementation projects" (RP 32). Therefore, this study pinpoints that easy, presentable and useful data and the information is critical for the successful implementation of ERP. In addition, the need to quickly and accurately analyse all data within the ERP is the key to achieving good business decisions which will ensure analytically-driven and predictive decisions.

4.2.1.2 Flexibility

In addition to data accessibility, another critical factor is data flexibility which depicts the ability to be easily fit-in and modified data and information into the ERP during and after implementation. This factor is critical because it defines the willingness to change or compromise that will be made by either the ERP users or the top management in general for successful ERP implementation. This is supported by the claim from one of the study respondent that "it is a great and huge relieved when our ERP system is able to easily need our needs" (RP 45). This claim is in line with another respondents' view which stated that:

> "The software is very good, talk of the interface is not dull, very easy to understand and the speed is averagely okay. Actually, we desire ERP system that is a very good and flexible tool for easy data collection and manipulation in order to make our job and daily business routine more convenient" (RP 35).

Thus, it is seen that the issue of data and information flexibility is very vital for successful ERP implementation because these data and information are needed by the companies during and after implementation.

4.2.1.3 Single System

The third critical factor identified by this study isa single system. The simple system in this study refers to easily knowable, simple, understanding and reasonably predictable ERP system that users and companies can easily adopt and use. This has been identified to be critical because the ERP system is expected to influence users and businesses, however, for this influence to be positive then there must be positive perception from the users. This study pinpoints simple system factor has a positive perception as expressed by one of the respondents that:

> "The integrating ability of SAP with some other software is what I admire most about this software, the use of a single database has also reduced redundancy within our organization because the modules are integrated, and there is no need for repeating data entry between departments. Once data are entered by one department they can be accessed through this simple system by other departments" (RP 12).

4.2.2 Expansion

The second category of critical success factors is classified under expansion factor. This study identified five major factors namely cost-effectiveness, increased productivity, customers' needs, time and resources saving and reduced personnel as presented in Figure 4.3.

Figure 4.3
Expansion Factors

These factors specifically focus on key issues of business development and extension. They revolve around the expectations of stakeholders on needed critical success factors that are vital to ERP implementation in order to expand and grow the business. These identified five factors are further be discussed in following subsections.

4.2.2.1 Cost-Effective

Based on respondents' assertions, cost-effective depicts the expectations of ERP stakeholders to have a system that will produce efficient results with little financial implications. This factor reflects the important relation between stakeholders' desires on ERP and input monetary issues. Although, majority of respondents that expressed this view are the top management whereas other respondents like IT personnel, users, and customers are not too expressive on this factor. For instance, one of the top management respondents said:

> "We know that ERP is a very good system to improve our business. It integrated all the application we use one login details and one very beautiful function of it is that it is a web-based application; I can log infrom any internet accessible device to monitor or check any link or connection from anywhere I am. However, we need to see if the

> decision to implement ERP is a very profitable one to our business because the financial implication is huge" (RP 55).

This view and many other concerns by other respondents depict that cost-effectiveness is a critical success factor that will determine if ERP implementation will be successful or not. Most importantly, this factor is been expressed by top management which will be one of the major issues that will influence top management commitment to the project. Without top management commitment then the implementation will not be successful or will be abandoned when started. Thus, the cost-effective factor is a critical success factor that is vital to not just the pre-implementation but also to post implementation of ERP.

4.2.2.2 Increased Productivity

This factor is identified as critical because it is one of the biggest goals for any businesses. Businesses are more concern with how products such as ERP system can impact positively on their businesses by bringing in more customers and money. This is the measure of the efficiency of ERP system in converting business resources into useful business profits. This was stressed by a respondent that:

> "ERP system is just the best thing that a company cannot afford not to have. No doubt, the company's productivity level increased. It has helped us in coordinating our manufacturing processes. I noticed ERPs are very good in capturing transactions on time" (RP 37).

Thus, increased productivity depicts that the SMEs can put out products quickly or complete services rapidly compared to when the ERP system was not implemented. Thus, it is very a critical success factor considering the fact that majority of the respondents expressed this view. This is supported by comments from the following three respondents as stated as follows:

> "As a customer has there been any improvements in the quality of service and the intellectual knowledge of the employees in recent times, how organized do you see the workspace environment as a whole and how effective is the organization in managing queues for service of customers" (RP 23).

Also,

> "The management played a very good role in the planning and implementation, the result is a good couple with also the fact that we that are in the project team also played an important role, so this is the best decision made. ERP software was implemented for the organisation when the management saw the need to improve the company's business process because of there a lot of issues with account department and the warehouse" (RP 32).

Likewise, respondent 14 maintained this view by advocating that:

> "For return on Investment; basically, on the surface, yes we understand, it is good. Just now, I said ERP system is really a powerful tool, it is very good but along the way or some of the way we manage the system or the way we handle it, then there is something like a negative way or anything may happen. But on the overall, it is really good, if you really do it in the proper way, you can really control OUR inventory, I can really know when you should buy this item, when the stock is at the minimum, then okay I must buy or when the stock is higher, I must control and when I should adjust the requirements and everything. If you really do it well, your inventory is good, it is really healthy but we are not perfect" (RP 14).

4.2.2.3 More Customers (SatisfyingCustomers' Needs)

Another critical success factor is the quest to satisfy business customers' needs in order to ensure that the implementation of the ERP within an organization is meaningful and impactful. This is because most businesses are after customers' attraction which is the major primary goal of SMEs. It supports the adage that customers are always right because they (customers) determines market demand and supply which is the main pivot of business profitability pendulum. This is pointed out by a respondent that:

> "Some of our resellers only had few customers under their names before but now, they have grown to the next level of partnership, like someone at the bronze level have risen to the gold level and many have even become a platinum partner with us, seriously… One of the magic of this success story is our implementation of ERP in our company which is helping us to meet our customers need satisfyingly. I must recommend this particular ERP, it's very good" (RP 25).

Thus, the soul of businesses is their customers and the monitoring with the beneficial growth of customers is vital to any business. This makes business and organization to be a concern with needs and issues that will affect them. This is buttressed by one of the study respondents that:

> "I'm not in the accounting department but from the list of customers we have generated through the system… We have really had a good turnout of new customers. Yes, our customer base has increased over the years, we have one competitor but they cannot beat us when it comes to our mode of operation especially how the ERP has been able to modify our business process. Also, we have been able to retain all our old customers too" (RP 19).

4.2.2.4 Reduced Personnel

Contrary to the factor of customers' needs that is broadly expressed by the majority of the stakeholders which formed the study respondent, reduced personnel factor is mentioned only by the top management respondents. For instance, it is explained by one of the top management respondents that:

> "Our company has been delivering quality service to our customer; our customer cannot leave because of this good service. However, we seek a system that can reduce our business expensive with reduce personnel and still provide good services that we are known for…." (RP 27).

In another instance, clarification on the role that ERP system plays in term of employee management which can aid the smooth running of the human resource (HR) department is expressed by another respondent as follows:

> "I like the fact that ERP has automated our business processes and forced us to use it the way it is designed not the way we might want it, you know it is in human nature to make things the way they want and if the things are done the way we want, it might not be good, ERP is a good idea that laid down some control and standards, even if you are the overall boss, the system's standard is set. For HR modules, if an employee resigned, the system automatically deactivate all the accesses given to the employee and while employee is making clearances sign out of the company finally" (RP 38).

Although this is a positive benefit, however, it has been discovered to work against ERP implementation in many companies where employees see the system to away their jobs. Therefore, some junior staff tends to work against the implementation of ERP in order to save their jobs. In addition, some staff sees it as a system that gives more priority to the management needs rather employee development needs. Hence, in order to ensure successful implementation of ERP, there is a need to consider this factor where the employee will seethe system as a motivation for their daily job rather than as a monitoring system which will take away their job and freedom.

4.2.2.5 Time and Resources Saving

Furthermore to reduced personnel factor, the factor of time and resources saving is identified in this study. To businesses, time is a valuable currency while the resource is the fuel that put the businesses on the market.

> "The ultimate power of being a small business owner is in making choices. One hour and dollar invested in ERP system directly affect how profit is made in the business. Recognize that saying yes to one event might divert from some activities to make room for others" (RP 48).

Furthermore,

> "It looked good for us back in the days but if we compare to what we use now, you will realize that you have wasted a lot of time with the old way of doing things… We have saved time to do more task in a day, it has reduced more labour and so on" (RP 51).

Thus, any system (such as ERP) that will cause loss of these two will be considered irrelevant and useless. This implies that successful or unsuccessful of ERP implementation dependent largely on the influence these two gives.

4.3 Result of Critical Failure Factors (CFF)

Contrary CSFs that deals with vital details needed to achieve successful ERP implementation, CFFs focus on those that can deflect successful ERP implementation which usually leads to ERP projects abandonment (failure) or non-started. This study identified seven CFFs that are responsible for the unsuccessful implementation of ERP in SMEs. These vital CFFs are categorized into two namely customization and cost and time. These two categories are summarized in Figure 4.4 which are further details discussed in the following subsections.

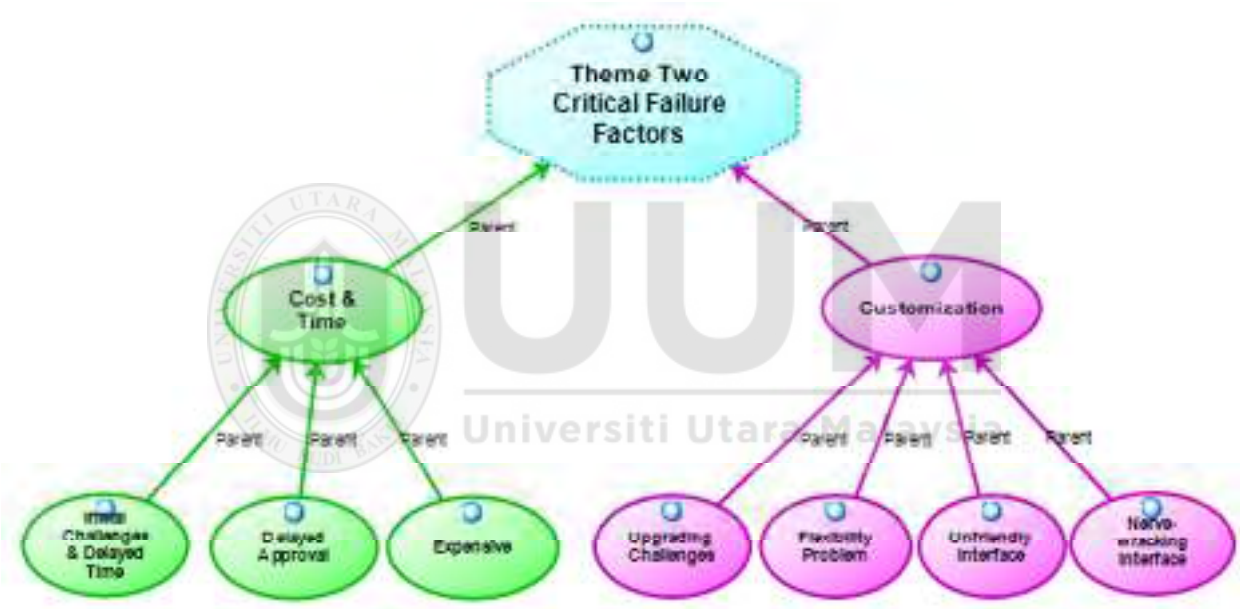

Figure 4.4
CFFs in SMEs for ERP Implementation

4.3.1 Effect of Cost and Time

The first category is titled cost and time because these factors have to do with themeasure of thebusiness period and used resources. This is found to be obtainable by three factors namely delayed approval, expensive and initial challenge and delayed time which are illustrated in Figure 4.5.

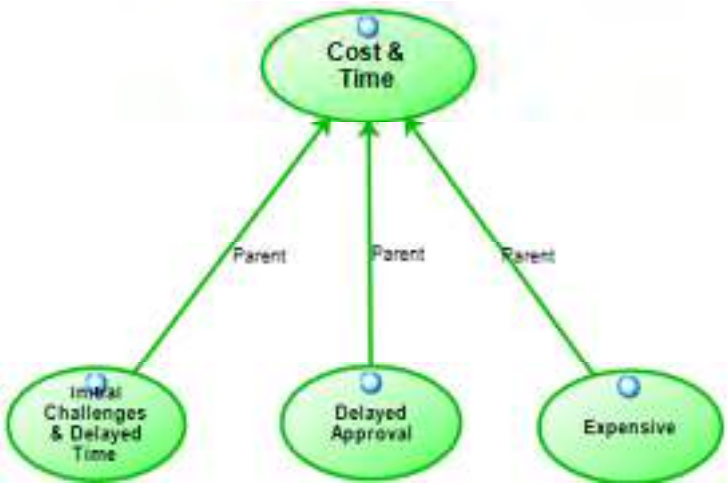

Figure 4.5
Cost and Time Factors

On one hand, this study refers to business period as the punctual and exact completion interval of thebusiness task which implies the duration of completing a target business task. On another hand, thebusiness cost is the exact amount of resources utilized or money paid to complete or achieve a business task. Based on the study, it can be inferred that cost and time factor will take the forms of (1) monetary value (2) material (3) effort (4) risk acquired (6) moments wasted and (7) opportunity missed. Subsequent subsections further discussed the rationales of these identified three factors of cost and time.

4.3.1.1 Delayed Approval

Delayed approval factor depicts a situation where approval for any implementation resources or phases of ERP is postponed, slow, later or cancelled and affect the timeline to complete the implementation. This can be between any of the stakeholders directly or indirectly attached to the implementation. This finding is supported by one of the study respondents concern that:

> "…the process have to take me through series of approval from the head of sales, the senior accountant and the store manager after which the equipment will be released by the store officer, although this approval just takes a click on the system of the person

> suppose that is to approve, the main problem is the three heads of department to approve the request are not always available at the same time or they don't get to see the request for approval on time… (RP 29).

Also, another respondent pointed out that:

> "The challenge I experience with ERP is that there are too long processes or maybe I say too many level of approvals before a task is approved, for instance, if I want to make request to collect a client premises equipment for a new customer, the process have to take me through series of approval from the head of sales, the senior accountant and the store manager after which the equipment will be released by the store officer" (RP 17).

These situations presented often put companies in adifficult position in order to anticipate and overcome created bottleneck and pains which will resultin implementation failure or abandonment. Therefore, in order to prevent such situations, there is aneed to critically consider the factor of delayed approved to deflect unforeseen failure and abandonment with ERP implementation in the SMEs.

4.3.1.2 Expensive

This study has been able to thedifferential between project costs and expensive. It can be seen that all project expenses are regarded as costs whereas not all project costs are project expenses. This fact is explained by one of the study respondents that "any costs incurred in making more profits or income generated assets cannot be referred as expenses because the income will take care of these costs" (RP 9). Thus, it becomes imperative to really understand the role that ERP implementation will play in business profits before deciding to go ahead. This is because the more money spends on expenses will affect the company profit and performance. Although trying to reduce expenses might increase business profit, however, it might also affect sales by failing to meet customers' expectations and cutting on quality. This finding is stated one of the respondent that:

> "We are running five modules, yes, we intended to run about seven modules but we could not because of the cost, the management ask us to streamline to the most important modules, I must tell you seriously that this investment was a big impact on the company's pocket, I was told that ERP is sold in hundreds of thousand dollars" (RP 41).

This proves that issues of expenses, costs, and incomes are vital in predicting any technology that will be implemented by a company. The reason for this is that these three have astrong influence on business survival particularly SMEs that are known for weak structure compared with large companies.

4.3.1.3 Initial Challenges and Delayed Time

As pointed out by one of the users of the ERP who is a study respondent that:

> "Almost one year. Of course, after one year, the problem lessened. The beginning session, a few months, of course, were very messy. Even we, the project team members also did not understand well. So, what I can say is, we hit a problem and then solve the problem. Hit and solve approach" (RP 10).

This implies that unprepared for unforeseen situations can offset the success of ERP implementation in its early stage. This concern is further expressed by another respondent that:

> "The decision to implement ERP is good but the challenge with the way it is slow to process things is becoming unbearable. The disadvantage is that the processes of implementing the executable tasks are too long for me...(RP 29).

Thus, the need to take to heart factor of initial challenges and delayed time to ensure successful ERP is vital because all stakeholders must be prepared and ready to within stand these limiting issues.

4.3.2 Customization

The second category is classified as customization because these factors focus on modification of the ERP system according to stakeholders' needs and requirements. This study identifies four factors that are associated with customization namely flexibility problem, nerve-wracking interaction, unfriendly interface and upgrading challenges which are discussed in the next subsections as represented in Figure 4.6

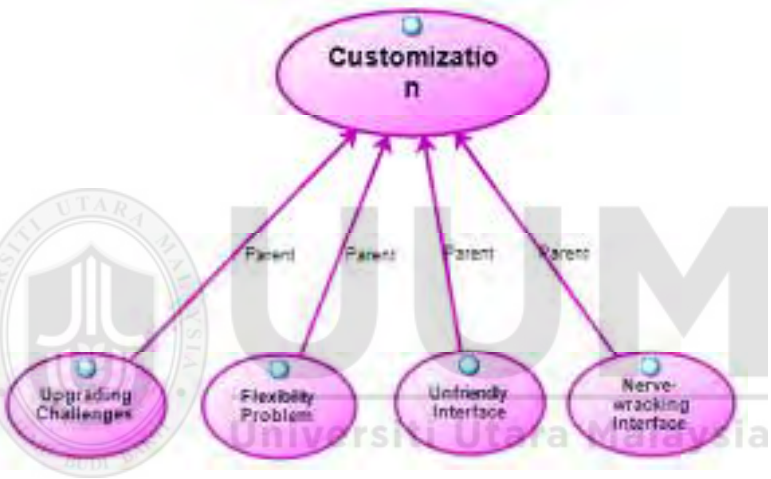

Figure 4.6
Customization Factors

Customization focuses on making the features and functionalities of ERP specifications conform to all the stakeholders' needs which are done by modifying features and content items. These four factors are further discussed in the following subsections.

4.3.2.1 Flexibility Problem

This factor depicts the ability to easily bend and modify system specification in order to fulfil stakeholders' requirement and needs. However, the increasing interest in theflexibility of

ERP customization by stakeholders could make the system weak which can create loopholes and complexity in achieving successful ERP implementation. It should be understood that ERP cannot satisfy all the stakeholders' needs, requirement, and expectation. If this fact is not well defined and explained to the stakeholders then it will lead to failure and abandonment of the implementation at its early stage. This finding is communicated by one of the study respondents saying:

> "… but there was a long delay which almost led to theabandonment of the implementation. This is because there are too many complaints and customization related issues whereas many of these are unreality and impracticable in system development and business environment" (RP 37).

4.3.2.2 Nerve-Wracking Interaction

In addition to flexibility problem, thestudy further identity interaction among all the stakeholders as one of the major factors that will determine successful or unsuccessful ERP implementation in the SMEs. When the interaction is cordial and mutual then success will be at hand, however, if there is nerve-wracking interaction then the implementation can be abandon or fail. IT personnel must take this factor vital because it will help in getting fast approval, easy completion and smooth implementation of ERP. One of the respondents mentioned this factor as follows:

> "The challenge I experience with ERP implementation is that there are too long processes or maybe I say too many levels of approvals before the system is agreed by other departments. This can be simplified is there is more friendly and cordially interaction among all the departments and stakeholders" (RP 36).

4.3.2.3 Unfriendly Interface

Contrary to nerve-wracking interaction which involves all stakeholders, theunfriendly interface is only mentioned by ERP users. This factor depicts that the successful

implementation of ERP depends on users' perception of its usefulness and efficiency. It shows the extent to which ERP can be used by users in order to accomplish their goals with satisfaction and effectiveness in their specified context of use. This finding is vital because it is needed in order to achieve successful post implementation of ERP especially in SMEs where users enjoy some level of freedom. This finding is expressed by one of the respondents saying:

> "I can say that ERP created more work for us, during and after the implementation, we have to employ more workforce, many times its looks like we are only solving the ERP issues meanwhile there are many other responsibilities like managing the whole company inter and extra networks, we get calls and complaints that it's slow, its hangs, the interface did not launch after clicking, the account department say oh I can't find this information and so on, then you have to teach new employee and attending to him/her every time, the bottom line is that if anything those not keep us busy, ERP will, also we need to interface with the support from Japan because we were not very familiar with it even despite our training" (RP 56).

Also, another respondent acclaimed that:

> "I think the software was already customized during implementation, besides I don't see much difference, the unfriendly interface will always be there… (RP 17).

Hence, in order to ensure successfully and continuous usage of ERP, there is aneed to consider users' behaviour by creating asystem that will be more user-friend.

4.3.2.4 Upgrading Challenges

Based on the study, it is discovered that both top management and users expressed their concern on the issue of ERP upgrade. Although the main aim of system upgrading is to maintain operational efficiency by overriding security issues, however, it can likewise bring pain and discomfort. For instance the difficulty of continuous upgrading can be overbearing for SMEs in term of financial commitment which is expressed by top management respondents like "My major worry of ERP is that there are lots of hidden costs involved like we the management are not ready to incur more costs for upgrading and updating" (RP 27).

This reflects that most SMEs are not ready to have a system that will continuously incur additional costs. Likewise, this view is supported by users' stand that upgrading and updating can create unforeseen problems and difficulties in terms of thebreakdown of other line-of-business application. This will lead to losing of business time and profit which will create a great discomfort for both users and top management. This finding is pointed out by many users' respondents in this study such as:

> "…some of this companies more than six months to recover from the issues caused by the upgrade, let me refer back to the implementation stage also took a lot of commitment from us financially, materially and our times…" (RP 41)

In another comment, the finding is stressed by another users' respondent saying:

> "I just noticed recently that the business is not booming as it used to be before we worked over time dealing with different customer's goods and so on, I want to relate this drop in business to the recent inefficiency of ERP, maybe we also need to upgrade…" (RP 53).

4.4 Result of ERP Implementation for SMEs Based on CSFs and CFFs

Based on the discoveries in Section 4.2 and 4.3, this study identified vital roles that CSFs and CFFs can play in successful ERP implementation. Specifically, this section discussed the important effect of CSFs and CFFs on ERP implementation. These are classified into two groups namely application integration and improved productivity which are summarized in Figure 4.7 while the following subsections discussed it in details.

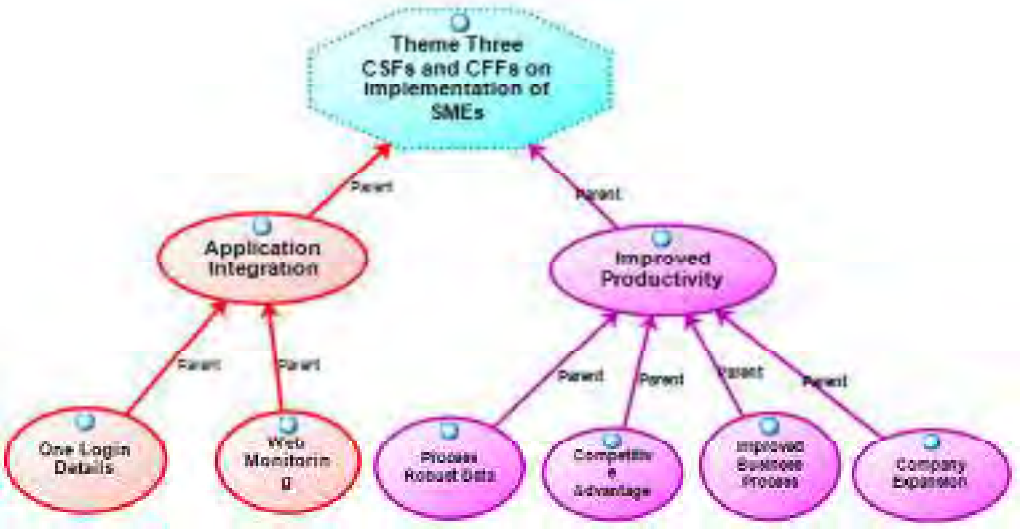

Figure 4.7
Roles Played of CSFs and CFFs in ERP Implementation

4.4.1 Application Integration

In order for ERP to meet the expectations of stakeholders, the issue of application integration where all needed resources and modules are interconnected to achieve profitable business environment is vital. This study identified two major points in order to achieve successful application integration which includes single accessibility and business activity monitoring as illustrated in Figure 4.8.

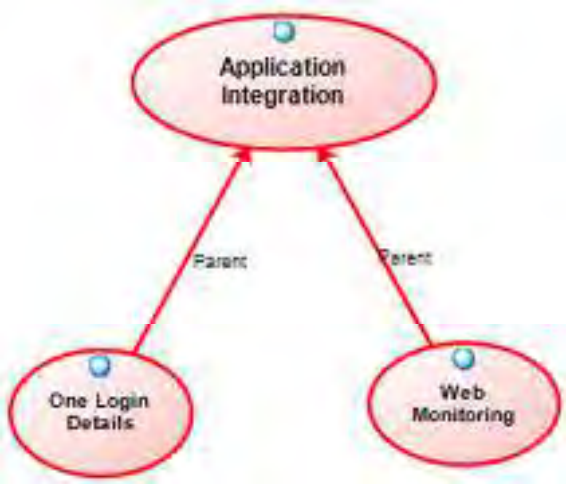

Figure 4.8
Application Integration Factors

Application integration depicts the optimization and merging of data and business workflows in order to achieve longevity of business profitability, theflexibility of business goals, processes, software, and hardware. Subsequent subsections further discussed these two identified factors.

4.4.1.1 One Login Detail (Single Accessibility)

One of the expectations of major stakeholders in the SMEs is to have an integrated application that can aim their business profitability which should have easy accessibility and usability. This depicts situation whereby users' possesses uninterrupted and unhindered accessibility to business information and data in order to make prompt business decision making. This is expressed by one of the respondents that "I can loginfrom any internet accessible device to monitor or check any link or connection from anywhere" (RP 48).

4.4.1.2 Web Monitoring System (Business Activity Monitoring)

The study discovered that ERP can be used for efficient business activity monitoring which is another major stakeholders' expectation in order to achieve business management and profitability. It makes use of business real-time information about the business which includes details about the business and customers' data. Specifically, business activity monitoring involves the use of ERP to proactively explore and identify vital business risks and opportunities in order to achieve optimized business efficiency and greater profitability. This finding is mainly pointed out by top management respondents, for instance, respondent 39 mentioned that: "the ERP system is more efficient in both business activity and process monitoring which is a big gain for any growing business".

4.4.2 Improved Productivity

Apart from application integration which is one of the major expectations of stakeholders on ERP implementation, an improved productivity is another major expectation. An improved productivity is the goal of many businesses where there is anincrease in profits and income to the business. It is expected by SMEs stakeholders that their businesses productivity will increase due to the implementation of ERP. It is discovered in this study that improves productivity can only be achieved in the presence of company expansion and competitive advantages as illustrated in Figure 4.9.

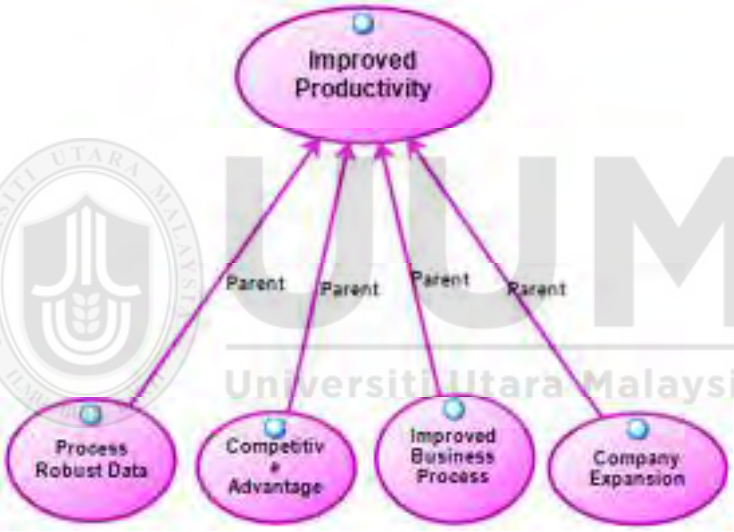

Figure 4.9
Improved Productivity Factors

4.4.2.1 Company Expansion

Business expansion is one of the major results that are obtained when successful ERP implementation is achieved. The system allows control of business at both local and global levels which increase the profit and incomes. This finding is expressed by one of the study respondents that "ERP shouldn't satisfy only current business requirements, however; there

should also be the flexibility to adapt any future changes that will come asthebusinessexpands both locally and internationally" (RP 48). Similarly, another respondent pointed out that:

> "We see the daily growth of our department, our monthly income increases by 25%, although our growth did not occur immediately after the ERP implementation, in fact, our revenue reduced for about four months after implementations, then we shoot up subsequently. We increase productivity on a scale of six after the four months window" (RP 10).

It can be seen that ERP can be used to manage business currencies and exchanges rates which can facilitator the translation across international borders while the financial information is kept on the system in the local currencies.

4.4.2.2 Competitive Advantages

Another vital role is that successful ERP implementation can aid competitive advantages of businesses. Competitive advantage refers to the superior and gains that a business enjoys or offers to customers over her other competitors. This gain can be in terms of greater values, faster service, prompt managerial decision and services that other competitors cannot provide. This is finding refers to a comment made by a respondent that:

> "The success story of my company is not about the big things, but I think it is the small things that make us good. This small thing is our strength and it is the rumour of having a good ERP and data warehouse. It gives us not only good image as SMEs with relatively small size but also acompetitive advantage over other businesses in our market. Though, we are exposed to headhunters from other organisation" (RP 44).

This same concern is mentioned by another respondent who is an ERP consultant that: "the most clever way to gain thebetter competitive advantage of other business competitors from ERP system is simply to implements the right and suitable one at the most appropriate time" (RP 20). This implies that the successful implementation of ERP will give the SME business to compete with more advantages with others within the same market environment.

4.4.2.3 Improved Business Process

Apart from better competitive advantages that ERP implementation gives to SMEs, an improved business process is another vital role played. A business process is the fulfilment of set business activities and tasks which when completed will aid the business goal. An improved business process revolves around optimizing business mission objective to complete achievement of the business objective which should be aided by the ERP. This finding is supported with one of the study respondents saying that:

> "No team of business decision-makers can possibly manage a business on their own neither can they succeed without a finely tuned operation that can control and manage so many moving parts. When it comes to controlling and managing the data used to run a business from end to end, (ERP) has long been a source of visibility, efficiency, standardization, and collaboration for organizations of all types and sizes" (RP 25).

Hence, this study argues that successful implementation of ERP in SMEs will create an improved business processes which will enable easy and smooth management. It further makes the SMEs to be more efficient and modern whereby it will also improve service quality and business satisfaction. The impact of ERP on business processes can be seen in two distinct ways. Firstly, it will remove, combine and improve the number of personnel and procedures involved in the business management. This is vital because it will reduce delay time and business processing time (waiting time) where risk and costs will be saved. Secondly, customers' satisfaction and requirement will be met which will lead to increased customers and profit for the business.

4.4.2.4 Process Robust Data

Furthermore, successful ERP implementation enables the business to have more data and information in order to make prompt and futuristic business decision that will ensure expansion and profitability for SMEs. Businesses with robust data processes will have an improved quality of its service in a consistent and transparency manner. This will reduce

redundancy and delay whereby providing standardization, efficient process, easier information dissemination and decision-making for the business. This is expressed by one of the study respondents as follows:

> "The advantage of successful ERP implementation is that it has allowed us to have access to the same information almost immediately through one unified user interface, this advantage really helps a lot, it is unlike previously where every employee has his/her own information to manage and when you check information from two different employee, there is a high tendency to find errors in the information about a specific thing, it never correlate because of different database, but now, we all fetch data from the same database and only superiors are given the right to update or modify information which also go through some level of approvals" (RP 50).

4.5 Result of ERP Enhancement Framework for SMEs Based on CSFs and CFFs

This section presents the findings obtained from the study respondents on the usage of CSFs and CFFs to enhance ERP implementation framework in SMEs. It is discovered in this study that ERP is more than a mere tool for business record transactional system. ERP enhances business operational and transactional improvement and source of customers' satisfaction with business profitability. Specifically to the SMEs, it is a tool for improved process, business efficient and scalable infrastructure which will enable future business growth sustainability. The findings on the identified CSFs and CFFs to enhance successful ERP implementation in the SMEs can be classified into two groups namely adequate planning and implementation and enhancement training. These two groups are summarized in Figure 4.10 while details presentation on these is discussed in the following subsections.

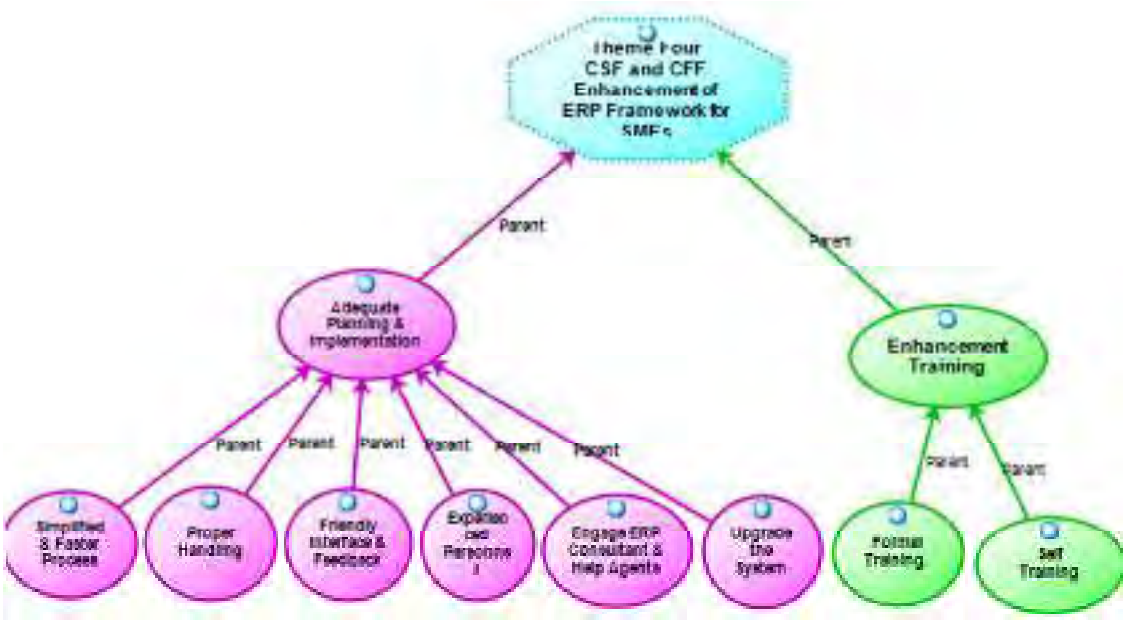

Figure 4.10
Factors Enhancing ERP Implementation in SMEs

4.5.1 Adequate Planning for the Implementation

This study identified some factors that specifically focus on SMEs planning towards their ERP implementation in order to have smooth and stress-free experiences that will not lead to failure and abandonment. Based on study respondents, six different vital factor are identified namely engagement, experienced personnel, feedback, handling of project, process and upgrade as illustrated in Figure 4.11

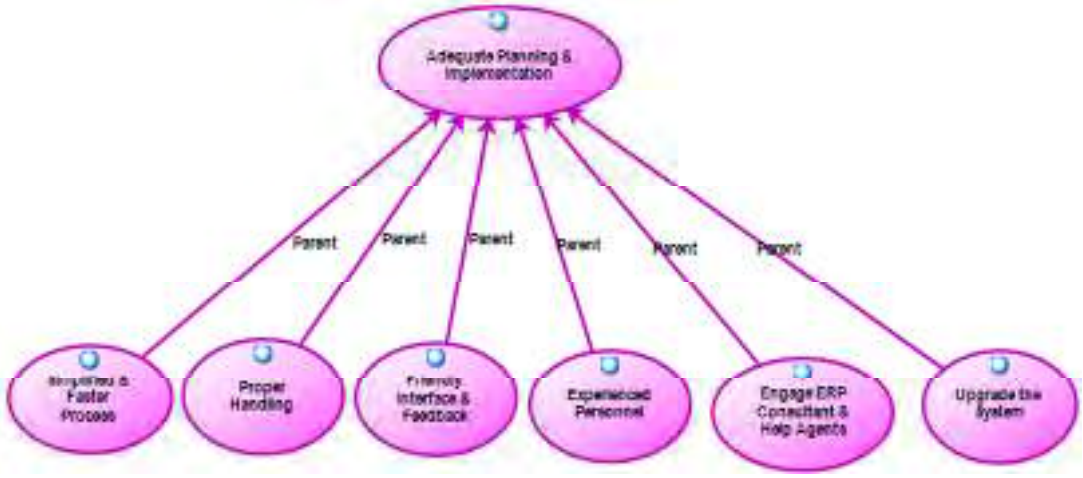

Figure 4.11
Adequate Planning and Implementation Factors

These six factors are pinpointed by major of the study respondents to be vital to adequate planning for ERP implementation within SMEs. Each of these identified factors is further discussed in details in the following subsections.

4.5.1.1 Engage ERP consultant and Help Agents

The issue of engaging the right ERP consultant and help agent is a critical and vital factor that should not be overlooked in order to achieve successful implementation both at the pre and post implementation phases. This is because this factor will provide needed and additional assurance for the ERP implementation success. From this study, an ERP consultant is a trained business expert in ERP and provides recommendations for SMEs on the different modules to implements in order to optimize their business for expansion and profitability. Whereas, ERP help agent is a liaison personnel that relates with both the technical project team (IT and consultants) and the ERP users (system users and top management) in order to communicate the new business ERP processes bring implemented. This help agent is usually experienced employee within the SME organization and the person is considered as a super-user and lead user who has high influence and respectable status with other staff. This is mentioned by one of the top management respondents that:

> "We never make the mistake of selecting a wrong consultant and help agent for our ERP implementation. This decision is considered as one of the most vital for a successful ERP implementation for my company. This is because any mistake or errors made by this personnel will automatically result in disaster and loss of huge money for us" (RP 38).

4.5.1.2 Experienced Personnel

In addition to engaging the right ERP consultant and help agent, the factor of having well experienced personnel is another vital concerns for successful ERP implementation in SMEs.

This is because SMEs are known for limited resources and funding. Therefore, they cannot afford to have repeated failure or abandonment because it will crashed their businesses leading to bankrupt and closure of the business. The factor of experienced personnel depicts ERP staffs (IT, consultant and Project technical members) that are extensively skilled and knowledgeable in their assigned tasks and duties. These are good communicators, focused, technical equipped and progressive thinkers with the sole aim of improving the business with the aid of technological advance system like ERP. This is imperative in order to have a successful ERP implementation that will lead to expansion and profitability for the SMEs. This concern is shared by one of the study respondents that:

> "To us, only the most skilled experienced personnel can activate the needed business expansion that is quested in our company via ERP. This is because there are many complex and conflicting processes and procedure involved in our company. The hands must be smart and intelligent to decode these limitations by the use of automatic system. Well maybe it is possible …" (RP 39).

4.5.1.3 Feedback

Feedback is the process of obtaining opinions from all the stakeholders on the ERP implementation in order to achieve the desired success. This is imperative because it will proved better insight on unforeseen situations at the planning phase and it will enhance better improve business experiences with both management and customers. This is mentioned by one of the ERP project technical respondents that:

> "When it comes to feedback many usually ignore it because they believe is least important and vital. Even if attention is given to it, they usually spend very little time seeking it with least details. However to us, we believe this is a great pitfall which usually caused delay, abandonment and failure. Before many realize this fact time has gone and the moment of truth will have passed" (RP 36).

Thus, this study recognizes that the factor of feedback is critical and vital for successful ERP implementation in the SMEs. It can be seen that this factor will bring about tangible data for

better business decisions, identify stakeholders' advocates, improve customer retention, gives actionable insight for better customers' experiences, promote customers' satisfaction and aid improvement of the business

4.5.1.4Proper Handling of the Implementation

In addition, the ways and manners that project of ERP implementation is handled is another vital and critical factor. This is because for the implementation not to be abandoned or failure there must be tight and strict monitoring and handling of every phase in the implementation. This is expressed by a respondent that:

> "The management played a very good role in the planning and implementation, they have been disappointed once by employing the ERP before, I feel because of this experience, they were well prepared ahead for the second ERP solution and the result is good couple with also the fact that we that are in the project team also played important role, so this is the best decision made…" (RP 34).

4.5.1.5 Simplified and Faster Process

The word process means series of steps or actions that must be taken in order to accomplish predefined objective(s). The predefined objective in this case is the successful implementation of ERP in the SMEs where the steps or action that will be taken to achieve this objective will be determined by both the technical team and the top management. The team usually have a guideline or procedural steps that will guide their implementation. Thus, this present study identify the need for these steps or actions (process involved in the ERP implementation) to be simple and fast-track systematic procedures. The simplicity of this guideline depicts that everybody within the team should be able to understand and know what to do at each phase of the implementation. Whereas, the fast-track implies that the guideline which be straightforward and aid fast completion of the implementation. This factor is

considered very important in order to achieve successful ERP implementation in the SMEs because of lack of funding that is characterized with SMEs. This concern is expressed by one of the technical project team member who is a respondent in this study as follows:

> "The implementation team should have a well-designed guideline that will assist them at all the stages of the implementation. … this is very vital for successful implementation. Furthermore, developers should simplify the process for users so that it can be more friendly and my advice to organizations considering ERP is that they should conduct sufficient testing phase in order to see if the system meets your business needs and produces the output you need, you reduce many undiscovered defect after testing phase" (RP 29).

4.5.1.6 Upgrading the System

Apart from simplified and fast-track process, the issue of infrastructural upgrading is another critical and vital factor in order to achieve successful ERP implementation. This is because having super software only cannot give a good user experiences. Users interact with the hardware and other infrastructures in order to access the software. Hence, for successful ERP implementation there is needs to upgrade all interconnecting infrastructures and hardware. This is pointed out by one of the study respondents who are ERP user that:

> "My overall assessment for implementing ERP is that the software good but I think there is need for my company to upgrade our hardware and other electronic applications…. , it will be better because we really wish that it works better. I believe if these other infrastructures are upgraded then the ERP will serve us better. This will boom our business …" (RP 46).

4.5.2 Enhancement Training

In addition to adequate planning group factors, enhance training group factors is the second classification of identified factors that enhance ERP Implementation in SMEs. This study pointed two factors that make up this group which are formal training and self-training as illustrated in Figure 4.12.

Figure 4.12
Enhancement Training Factors

In generally, training involves the act of teaching specific skill and behaviour. Whereas, training in business involves the act of increasing personnel knowledge and skills base in order to enhance their performance on the job and improve the business generally. Based on this study, it can be seen that training can be used to achieve four major needs in ERP implementation namely, consistent experience and background knowledge, employeesatisfaction with motivation, improved personnel performance and improve productivity. There are two factors identified by this study that made up training namely formal training and self-training whereby the following subsections give a detailed discussion of these two factors.

4.5.2.1 Formal Training

Formal training refers to the systematic tutoring of both top management and users on ERP. This should be a continuous act whenever upgrades are done in the software. It create an opportunities for top management to improve their staffs self-fulfilment and performance. This type of training gives more focus to the formal business function which builds new strategies and professionalism among ERP users. It should be done by the top management in

order for the company to improve the skill and productivity of her staffs and ensure profitability and long-term success of business. This finding supported the claim from one of the study respondents that:

> "My company should organize more serious training to us the users because we were all left in darkness during the implementation planning phase. Also, there is a need for continuous training to us the users in order to reduce the number ofcomplaints…" (RP 38).

4.5.2.2 Self-Training

Apart from the formal training provided by top management, users are expected to develop themselves personally. This is the concept behind self-training which is a form of informal training where the user acquire skills and knowledge from practice or observing other users. This is mentioned by many of the study respondents that are ERP users such as RP 32 saying:

> "I learnt more from the trainings received from my superior and colleagues. It is my self-discovery act that improves me…"

Also, another respondent pointed out that:

> "We the users also needs to try to train ourselves because I discovered organizations prioritize the training of the higher level staffs to the lower level staffs, meanwhile the lower level staffs are the main users of the software. I learnt the software through self-training" (RP 43)

4.6 ERP Implementation Framework

Based on responses from this study respondent, it is seen that the ultimate goal in ERP implementation is to achieve business effectiveness and profitability. Likewise many of the respondents classify ERP implementation in two stages namely project stage and post-project. The first stage is the projectstage which is the beginning of the ERP adoption decision is made and major steps are taken to kick start the implementation. On the other

hand, the post-project stage is when the implementation team has completed the system and it is ready to go live. The “go live” imply that the system is ready to be use by users for their normal dailyactivities. These two stages are very vital to the successful implementation of ERP. Also, the identified CSFs and CFFs are vital at both stages because it define failure and success of ERP implementation in becoming an integral part of a business operation.Figure 4.13summarize factors that influence successful ERP implementation in SMEs.

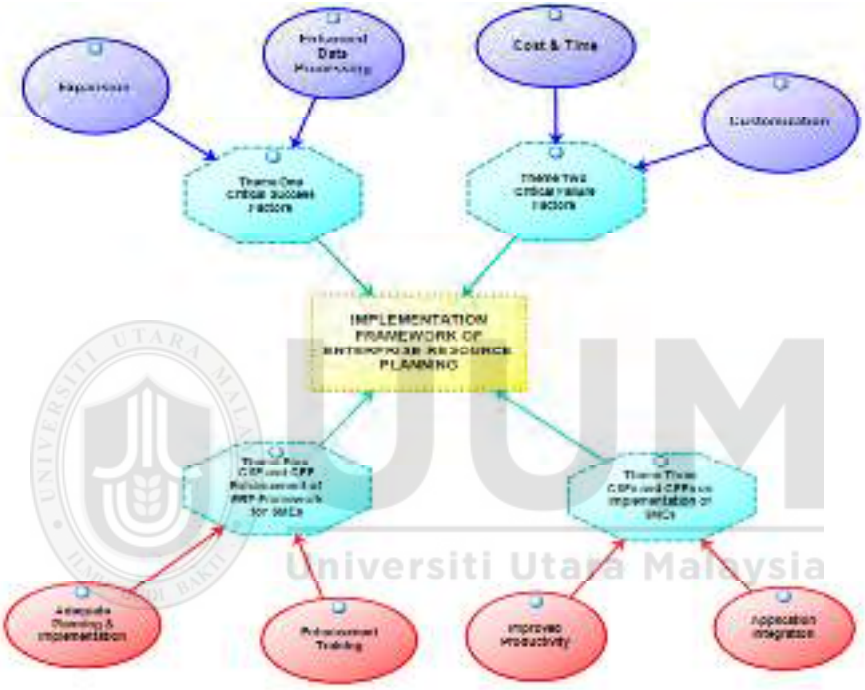

Figure 4.13
CSF and CFF in ERP Implementation in SMEs

An example that these identified CSFs and CFFs are vital at both stages is seen with customization factor. Customization in ERP implementation is determined at the project stage while the implementation and evaluation of customization is achieved under post-project stage. This same scenario is seen with the factors of costs and time whereas adequate planning is expected at the project stage while prudent execution is mandatory at post-project stage.

4.7 Framework Validation

This subsection presents the findings from the expert review done to validate the framework. The expert review make used of five experts within ERP and SMEs. The experts are all PhD holders in their domains and they possess over 12 years working experience.The review process took two months process which took place between November and December 2016. The formatted and designed form for expert review containing the proposed framework whereas four major questions were asked the experts. These four major questions expert review session questions (Interview II) are listed as follows:

(Q1) Based on literature review and first interview conducted previously, this proposed framework was developed (Present the proposed framework). As an expert, what is your view about the practicality of this proposed framework?

(Q2) What are possible weaknesses and limitations you foresee in the proposed framework?

(Q3) Can you please give further area of improvement on the proposed framework?

(Q4) How best can your rates the proposed framework in term of simplicity, clarity, cost and time-saving?

The expert review form was distributed using email and they were all collected back using same platform. All the five experts gave their feedback in written format however, one of the expert asked that the form be reformatted and rearranged. This was done and resent to the expert then feedback was received. Generally, all the eight experts commented that the form terminology is easy to understand. Table 4.1 present summary of the feedback received from the study experts.

Table 4.1
Expert Review Feedback Report

Framework Nature	Frequency			Percentage
	Not Well-Defined	Maybe Not Well-Defined	Well-Defined	
Practicality		1	4	80
Simplicity			5	100
Clarity		1	4	80
Cost Saving			5	100
Time Saving			5	100

Based on the above table, it can be seen that majority of the experts agreed the proposed framework is practical, simple, clear, cost reduction and time saving. This is evidenced on the fact that over 80% of the experts referred the framework to be well defined. Likewise, the experts did not point out any limitations or weakness in the proposed framework. This result validated the proposed framework which is one of the study objectives as stated in Chapter One.

4.8 Chapter Summary

This chapter has provided needed results that should be considered by SMEs when implementing ERP. These identified factors forms the guideline for successful ERP implementation in SMEs. This study identified 29 factors which are classified under 8 groups as presented in Figure 4.13. The study is specifically tailored to SMEs in order to achieve successful ERP implementation for the development and profitability of their businesses.

CHAPTER FIVE

DISCUSSION OF FINDINGS

This chapter presents the detail discussion on the obtained findings of the study. The discussion is based on the qualitativelyanalyzed results obtained from the study respondents as presented in Chapter Four. Whereas, this chapter specifically provide answers to the research objectives stated in Chapter One of the studies. The chapter is made up of six sections. Section 5.1 introduces the discussion by recalling the research objectives and themain purpose of the study while Section 5.2 to 5.5 present the answers to the four research objectives. The chapter summary is presented in Section 5.6 which cap-up the discussion by summarizing the answer to the study main purpose.

5.1 Introduction

This study sets out to explore successful ERP implementation framework for SMEs in order to achieve business expansion and profitability. At this stage, the findings from the in-depth interview are merged in the relevant sections of the discussion. The discussion follows the research objectives stated in the Chapter One of this study which is as follows:

I. To identify Critical Success Factors (CSF) that influence successful ERP implementation in Malaysia SMEs.

II. To identify Critical Failure Factors (CFF) that influence successful ERP implementation in Malaysia SMEs.

III. To investigate the roles played by CSFs and CFFs in achieving successful ERP implementation in Malaysia SMEs.

IV. To develop an implementation framework of ERP for SMEs using CSFs and CFFs.

This study's method is guided by the three previous related studies namely Chatzidakis, and Grande (2013) Tarigan, Basana and Suprapto (2012) and Sannarnes (2010) which assisted the study to distinctly investigate, apply and discuss the result outcomes (Colistra, 2012) especially in a study requiring to know the stakeholders' perception and views. In line with the main objective of knowing the CSFs, CFFs, and framework that ensure successful implementation of ERP in SMEs, the study embarked on a qualitative method approach which made use of anin-depth interview with all stakeholders within SMEs. Specifically, the study objectives were explored through the lens of DeLone and McLean Model (2003; 2002; 1992) and Agency theory (Jensen & Meckling, 1976). The combination of one theory and one model provides the theoretical guide for the study and further strengthened the study findings. Based on Creswell and Ckark (2007) suggestion that in-depth interview can be used to provide answers to research quests in order to discover new factors and view which might be different or similar with the literature. Thus, this chapter provides answers to stated research objectives in Chapter One based on the in-depth interview findings presented in Chapter Four. These answers are discussed in Sections 5.2 to 5.5.

5.2 Result of Research Objective I: *To identifyCritical Success Factors (CSFs) that influence successful ERP implementation in SMEs.*

This study identified eight CSFs that influence successful implementation of ERP in SMEs which include accessibility, flexibility, simple system, cost-effectiveness, increased productivity, customers' needs, time and resources saving and reduced personnel. These eight CSFs are categorized into two group namely enhanced data processing and expansion. Firstly, this implies that SMEs desire more access and management of business data that will

lead to more profit for their businesses. Secondly, this implies that SMEs desire ERP implementation which should enhance their businesses expansion in order to make more profits or develops into large businesses. This finding is found to contradict Goni, Chofreh, and Sahran (2011) and Ngai, Law, and Wat (2008) where these studies emphasized on business procedural and organizational culture as vital CSFs for ERP implementation. However, this finding support Ahmad and Cuenca (2013) and Osman, Yusuff, Tang and Jafari (2006) where these studies emphasized on data accuracy, project management, communication and cost-reduction as vital CSFs in the implementation of ERP.

It can be inferred based on this finding that SMEs classified ERP implementation to be successful if the implementation provides them with robust business data. This study has pointed out that business data is vital for the successful daily operations of SMEs if their businesses must survive in this competitive business market. Most importantly, it can be seen that SMEs are interested in data accessibility and interaction that will enhance easy and effective information, strategy, and performance. This is because with adequate business data decision making will become flexible and effective which in turn will improve business operations and profitability. Apart from business data, this study has further shown that SMEs focus on how their businesses can expand and grow either by having a stable business empire or into large businesses. It can seem that many SMEs are looking for ways of generating and utilizing opportunities in order to showcase their businesses to the competitive markets which many of them perceived being tough to penetrate. Based on this finding, it can be inferred that SMEs depend on computational and system tools such as ERP to provide the needed platform and guide in order for them to penetrate this market. Hence, it is seen that ERP can help their businesses in long-term growth plan and expansion.

5.3 Result of Research Objective II: *To identify Critical Failure Factors (CFF) that influence successful ERP implementation in Malaysia SMEs*

Based on findings presented in Chapter Four, this study identified seven factors that are considered critical for implementing ERP in SMEs which include flexibility problem, nerve-wracking interaction, unfriendly interface, upgrading challenges, delayed approval, expensive and initial challenge and delayed time. These eight factors are classified as the effect of customization, cost and time factors. This implies that the biggest threat to successful implementation of ERP in SMEs has to do with issues of theproject cost, project time duration and customization complexity. This study argues that many ERP implementations will continue to fail if attentions are solely given to ERP software license cost and time taken to run the software only without considering other implementation phases such as upgrading, training, interaction and the software interface. Hence, this study pointed out that unrealistic cost, customization and time commitments will drive poor implementation decisions that will lead to fail or abandonment of the project.

This finding is in line with some studies such as Ganesh and Mehta (2016), Garg and Garg (2013) and Umble, Haft and Umble (2003) where these studies agreed that many SMEs implementations failed due to unforeseen and unbudgeted costs which are been referred to as hidden costs. These hidden costs can be in many areas such as data conversion, integration and testing, data analysis, training, retaining best staff for the project, post implementation, hardware and others. It can be seen that all the stakeholders involve in ERP implementation agreed that the issue of hidden costs has great influence on the failure or success of ERP in SMEs. In addition Powell, Alfnes, Strandhagen and Dreyer (2013) and Gattiker and Goodhue (2005) pointed out that ERP implementation is a time-consuming operation with vast investment whereas SMEs might not be able to courageously and patiently invest in it. It is discovered based on findings of this study that many ERP implementations fail because

SMEs are not ready to commit enormous funds and invest into it. The major reason for this might be due to lack of fund and resources within their reach. This reason supported Dixit and Prakash (2011)argument that if SMEs can devote huge funding and invest into ERP then there will not be any cases of abandonment nor failure in the implementation. Furthermore, the finding on customization factor is in line with Buonanno et al (2005) claim that there are lots of complications when it comes to ERP customization with SMEs compared with LE. These complications can occur at any phase of the implementation (initial, early, during and post) and these are found to be difficult to manage as pointed out in this study. Also, this study identifies that customization complications have a direct influence on project time and costs. This is because complex customization can prolong the implementation time and can give additional cost which might lead to implementation abandonment or failure.

5.4 Result of Research Objective III: *To investigate the roles played by CSFs and CFFs in achieving successful ERP implementation in Malaysia SMEs*

Two major roles played are identified in this study for successful ERP implementation among SMEs which are application integration and improved productivity. The first is that ERP implementation should provide holistic application integration which is also called ERP integration. ERP integration involves the interconnecting of data or application program for the central usage of all users at various locations and for diverging purposes. The integration is expected to support interoperation (connecting various infrastructure with different OS) and provide data accessibility, robustness, and scalability. This finding support claims from Azevedo,Azevedo and Romão (2014), Al-Johani and Youssef (2013) and Themistocleous, Irani, O'Keefe and Paul (2001) studies where it is pointed out that successful ERP implementation can be measured based on application integration and usability of the ERP in

line with specified purposes. The second role played as identified by this study is that ERP implementation should provide an improved productivity to SMEs in order to declare it successful. This is because ERP provides access to data and information which enable prompt business decision making in forms of production decision, customers' communications and others. These will improve the business operation which in turn will positively influence production and profitability. This finding is consistent with similar findings from Ranjan, Jha and Pal (2016), Supramaniam, Abdullah and Ponnan (2014), Qutaishat, Khattab, Zaid and Al-Manasra (2012) and Amoako-Gyampah and Salam (2004) studies which maintained that successful ERP implementation will positively influence improved productivity.

5.5 The result of Research Objective IV:*To develop an implementation framework of ERP forSMEs using CSFs and CFFs.*

Based on this study finding, it is discovered that in order to achieve successful ERP implementation for SMEs there is a need for adequate planning and enhanced training. Planning factor is found to be very critical because of the nature of businesses that make up SMEs. Most SMEs funding is unstable and decision making is usually center on few individuals. Hence, for successful ERP implementation, there must be a clear goal, defined a plan and constant monitoring of the project budget. This implies that ERP implementation managers should have a unique implementation strategy which should be precisely designed for individual SMEs based on their business need and goal. The precisely designed implementation strategy should likewise consider SMEs ability to manage changes during and post implementation phases in order to ensure the comprehensive and holistic success of the implementation. Therefore, the factor of adequate planning ensures that ERP manager and team avoid financial, social, environmental, physical and emotional difficulties in order to

achieve successful ERP implementation. This position is found to be similar with the conclusions made by Nettsträter, Geißen, Witthaut, Ebel and Schoneboom (2015), Ahmad and Cuenca (2013) and Ehie and Madsen (2005) studies where their emphasis is that adequate planned is vital for the successful implementation of ERP.

In the same vein, it is further discovered based on this study finding that for successful ERP implementation to be achieved in the SMEs then enhanced training program must be improved. This is because when staff are well trained it will develop their skills and motivation which will, in turn, improves their potentials and gives the needed motivation for competitive work team. This study specifically pointed out that enhanced training on ERP should be a continuous exercise in order to empower the staffs to make good use of the system for business productivity and profitability. This study evidence support claims from previous studies such as Kim, Do and Choe (2015), Esteves (2014) and Amoako-Gyampah and Salam (2004) where it is established that well trained and skilled staffs bring out the beauty of ERP implementation by making good use of the system to create more wealth for their companies.

Thus, this study has pointed to these two factors (adequate planning and enhanced trained) as being a pivot for successful ERP implementation in SMEs. Although, these two factors are identified as being vital, however, the combination of all the factors identified in this study is regarded as being critical for the successful ERP implementation in SMEs. This study imagines the concept of implementation framework as a house with different sections making up the building. Figure 5.1 illustrated the study concept of the implementation framework of ERP for the SMEs.

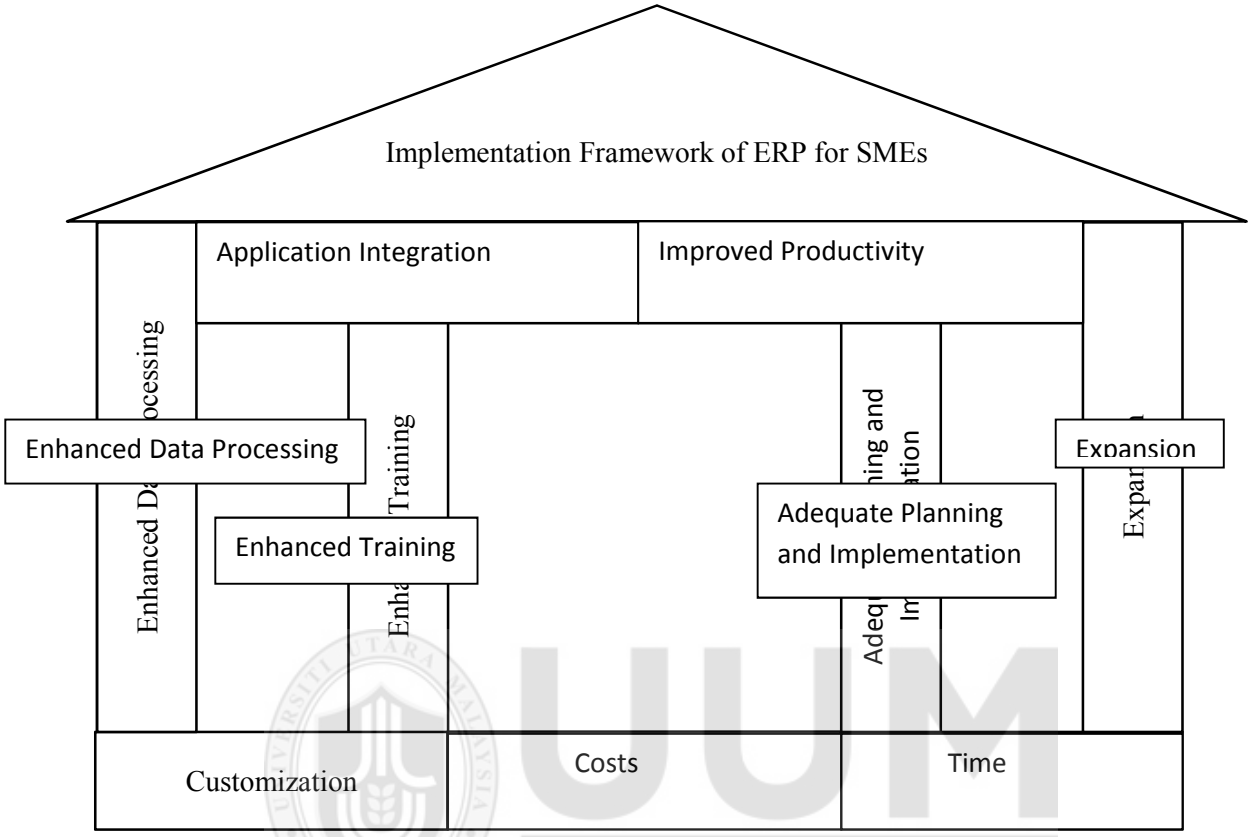

Figure 5.1: Implementation Framework of ERP for SMEs

Implementation Framework of ERP for SMEs

This framework depicts project costs, project time and the system customization as the foundation of the ERP implementation building. These factors are regarded as being fundamentally important because of the nature of businesses associated with SMES. SMEs businesses are associated with limited funds, resources and decision making on few individuals. Therefore, if any of these three factors are not carefully decided then the implementation will fail before starting. This is the rationale for picturing these three factors as the foundation of the building of successful ERP implementation. In addition, two major factors are identified as the building pillars which include enhanced data processing and expansion. These two pillars are vital to successful ERP implementation because they form the primary target of the SMEs on their businesses productivity and profitability. It should be noted based on Figure 5.1 that customization supports enhanced data processing which is in line with Kwok, Nguyen and Lam (2008) study where it is pointed out that robust

customization outcomes produce efficient data processing that enhances business decision-making. Also, the figure shows that costs and time factors support expansion which is based on finding from Umble, Haft, and Umble (2003) study.

Moreover, the framework also shows that two inner pillars namely adequate planning and enhanced training. The pillar of adequate planning is supported by the factors of time and costs which is based on study result from Ram, Corkindale, and Wu(2013). It is argued that for successful ERP implementation, managers must ensure proper planning on all implementation resources, time and budget. Also, customization support enhanced training which is in line with finding in Parr, Shanks and Darke (2013) and Fui-Hoon Nah, Lee-Shang Lau and Kuang (2001) studies. It is observed that for a successful customization and data processing there is a need for the skillful training of staffs.

Furthermore, the implementation framework depicts two factors as the ceiling of the building which includes application integration and improved productivity. These two factors reflect the expectation of SMEs from ERP implementation. A close examination of the framework reveals that application integration is supported by training, data processing, and customization. This implies that for efficient application integration then the factors of customization, data processing, and training are vital in ERP implementation. This claim is supported by findings from Zhao, Zhang, Shen, Shen and Chen (2014) and Gupta (2000) studies. Likewise, improved productivity is supported by adequate planning, expansion, costs and time factors which connote that business productivity cannot be achieved without these three factors. This finding collaborates results from Plaza (2016) and Al-MashariAl-Mudimighand Zairi (2003) studies where it is pointed out that for business productivity and profitability then it is important to incorporate factors such as project costs, project timing, project planning and project expansion.

5.6 Chapter Summary

This chapter presents the discussion of the study finding as stated in Chapter Four of this thesis. The discussion made use of the four stated research objectives as stated in Chapter One. The main contribution of this study is the implementation framework of ERP in SMEs which is the main focus of the fourth research objective and has been presented in Section 5.5 of this chapter. The framework is presented as a house building with different sections namely, the foundation, body pillars, inner pillars and the ceiling. ERP system customization, project timing, and project costs represent the foundation while the body pillars are expansion and enhanced data processing. Inner pillars are adequate planning and training while the ceiling is made up of application integration and improved productivity. All sections of the building are essential just as all the factors are vital and critical for successful ERP implementation in the SMEs.

CHAPTER SIX

CONCLUSION

This chapter presents the study conclusion which is drawn from the other chapters from one to five. The chapter begins with Section 6.1 which gives a brief introduction to the study research problem as stated in Chapter One, study findings and discussions presented in Chapter Four and Five respectively. Section 6.2 shed light into the study implication and significant while Section 6.3 present the study theoretical contributions as related to the proposed framework and Section 6.4 outlined the study recommendations to various stakeholders involved in the implementation of ERP. Section 6.4 depicts the study limitation and Section 6.5 states the future works that are an envelope in this study.

6.1 Introduction

Based on previous studies, it is recognized that implementation of ERP has little success stories, especially within SMEs. The SMEs are very important sector because the sector is the backbone of any developing and developed countries. The sector is crucial to a nation's economic growth and prosperity. Whereas, ERP system is targeted to provide the needed support for productivity and profitability which will positively affect the nation's economic growth and prosperity. The study of implementation ERP concerns is very vital in order to motivate and persuade SMEs companies to go for the implementation because the system can support their future growth. Although ERP is regarded as a vital tool for the SMEs however, there are lots of resistance to the successful implementation of this system in the SMEs. This is despite efforts and huge investments committed to SMEs management and yet there are still lots of failures associated with ERP implementation in the sector. Thus, this study

identifies Critical Success Factors (CSF) and Critical Failure Factors (CFF) that influence successful ERP implementation in SMEs. Based on these CSFs and CFFs, the study proposes an implementation framework of ERP for SMEs. The next section discusses the implication of the finding of this study.

6.2 Practical Implication of the Study

This study has been able to propose an ERP implementation framework specifically targeted at the SMEs. The framework strengthens the position of existing ERP implementation framework through explication of the importance of ERP implementation in SMEs based on finding from this study. These existing ERP implementation framework include Ghosh and Biswas (2017), Ganesh and Mehta (2016), Reid, Ismail and Sharifi (2016), Brown, Xu and Stevenson (2015), Bhawarkar et al (2013), Al-Johani and Youssef (2013), Snider, da Silveira and Balakrishnan (2009) and Moller (2005) whereas most of these studies made use of IT managers as their target participant in data collection whereas this current study creates a balanced perspective by involving other stakeholders (like customers, users, management, and consultants) to enhance a wide and broad approach to ERP implementation in SME. A balanced perspective involving all stakeholders within SMEs is imperative because their actions determine the failure or success of the implementation. These stakeholders largely influence or affect the perception of ERP implementation and determine if the implementation is valuable or not. Hence, the finding of this current study has provided this balanced perspective which can be viewed in the following ways.

Firstly, the study implementation framework depicts that money, time and customization is very imperative for the successful implementation of ERP in SMEs. This makes that both SMEs management and ERP implementation team should take good note of these factors

because these factors can result in implementation failure before starting. To the SMEs management, there should be enough budget, time allocation, and extensive customization design before, during and after the implementation. Likewise, for the ERP implementation team, there should be proper and strict usage of project budget, ensure adequate timeline is given and robust requirement with detailed implementation of requirement on customization. When these concerns are guided and followed then the implementation starts up can be referred as being successful. Secondly, this study finding argues that both SMEs managements and ERP implementation team should pay more attention to implementing a system that will enable SME businesses to expand and enhance useful data and information for the growth of the businesses. This is very important in order to ensure that ERP implementation is considered successful because to SMEs access to data and information is vital to their growth. Also, it is the desire of every SME owners for their businesses to be more productive and profitable or grow into LE.

The concern on business growth leads to the third point which is that it is vital for ERP implementation to support application integration and improve business productivity. ERP implementation team should seek for ways that proposed ERP implementation in the SMEs can support other internal and external applications being made use by the SMEs. This is very important because it will reduce cost and burden of extra stresses implementing other applications. Likewise, the team should understand that implemented ERP should be able to provide businesses with necessary support and improvement which will transform the businesses positively. In the line of thoughts, SMEs managements and staffs should be ready to allow the changes that the implemented ERP will do in their businesses. This is very imperative because implemented ERP system will affect business procedure and staff routine in many ways and the SMEs should be prepared for such changes. Thus, the factor has identified in this current study is very vital in order for both SMEs managements and staffs to

be able to embrace the changes that will be affected by ERP implementation in their businesses.

Talking about training as a tool to ERP implementation change management leads to the fourth point which is that training and adequate planning are both inner pillars that sustain successful ERP implementation. This current study argues that for successful ERP implementation to be sustained in SMEs then the factors of adequate planning and training must be seriously observed by both ERP implementation team and the SMEs managements. It is maintained in this current study that both ERP implementation team and the SMEs managements should plan seriously for the system implementation. The management should provide and support needed concepts and materials that are vital to the successful implementation of the system. Meanwhile, the implementation team should make known all their need on time to the management and should have winning strategies for any unforeseen implementation situations.

Likewise, it is pointed out in this current study that both ERP implementation team and the SMEs managements should be involved in training sessions on the implemented ERP. The ERP implementation team should train both SMEs top management and staffs on the usage of the system. Also, SMEs management should organize both internal and external training on the system usage with their staffs. These training should be continuous until when there is stability in the operation of the business system. Hence, this current study proposes a framework which can serve as a guide for SMEs managements and ERP implementation team in order to successfully implement ERP system that will be productivity and profitable. It can act as a pivot for smooth, efficient and successful ERP implementation for SMEs businesses. The study contributes to existing knowledge of ERP implementation by expositing eight major factors that aid successful ERP implementation. The successful ERP

implementation in this current study is considered as a house building and these identified eight major factors are the building blocks and sections that made up the house.

6.3 Theoretical Implication of the Study

This subsection discusses the relation of the implementation framework of ERP for SMEsas illustrated in Figure 5.1 with the study underpinning theories presented under Chapter Two in Section 2.7. The study used one theory and one model which are Agency Theory (Jensen & Meckling, 1976) and DeLone and McLean Model (2003; 2002; 1992). The contributions of this study can be looked in the light of these two theories. The following subsections explain more about them and their relationship to this study.

6.3.1 Implication on the Delone and Mclean Model

This study has established nine pillars for successful ERP implementation within the SMEs. These nine pillars are application integration, improved productivity, enhanced data processing, enhanced training, adequate planning and implementation, expansion, customization, cost and time. Those aforementioned pillars as illustrated in Figure 5.1 have twenty nine sub-factors which made up the comprehensive framework. The framework can be used to appraise ERP implementation in any organization in term of system, information and service quality. These three natures (system, information and service quality) have a subsequent effect on the intention to use or the use and user satisfaction which is the major idea in DeLone and McLean model (1992). The identified factors in this current study contribute to the factors of Net Benefits as stated in DeLone and McLean model (1992). This implies that the proposed framework in this study will enhance ERP organizational gains and

benefits. These gains and benefits are the net benefits that will positively persuade user satisfaction on continuous usage of the system. Likewise, net benefits as stated by DeLone and McLean model (1992) can be viewed as stakeholders' expectation on ERP implementation and performance which is one of the major gaps filled in this study. This is filled with the identified factors established in this current study. For instance, this study made used of all stakeholders involve in ERP to provide a comprehensive and successful framework that will promote positive organization net benefits. This organizational net benefits impactthe nature, culture and traditions of the company usage of ERP to promote profitability and effectiveness.

6.3.2 Implication on the Agency Theory

Based on Basu and Lederer (2011), agency theory explores the problem arising from parties' cooperation in terms of different attitudes toward risk and goals. This theory depicts the atmosphere within a party or between parties in terms of contracts where one party (the principal) engages another party (the agent) to perform a service on the former's behalf with the delegation of some decision making authority to the latter. In relation to ERP implementation, this theory depicts the imperative of stakeholders' relationship in order to achieve successful ERP project. The factors identified in this study framework are drivers for successful ERP implementation in any SMEs to achieve profitability and effectiveness. Similarly, these factors will enhance smooth and continuous interaction between the implementation consultants and the organization. The consideration of Agency theory in the light of these identified factors (framework) will prevent against ERP implementation failure especially with issues of management and consultants. Issues such as less qualified consultants and inexperienced user which normally cause ERP implementation failure will be

resolved. Thus, this current study contributes to the application of Agency theory within ERP implementation in order to achieve organizational profit and effectiveness.

6.4 Recommendation of the Study

This study has pointed out that successful ERP implementation implies achieving desired objectives in lines with time, budget, satisfactory, productivity and profitability. It shows that irrespective of the nature of SMEs businesses, the successful implementation of ERP is serious projects that must be taken critically. Therefore, all stakeholders should not only recognize and understand the needed CSFs and CFFs but should also be ready to take proactive actions and recommendations that will ensure successful ERP implementation. Based on the finding of this current study these following recommendations are identified:

6.4.1 Recommendation for SMEs Top Management

1) Right Selection of ERP Vendor and Project Consultants: The SMEs top management should have a clear and extensive list of their target objective(s) with requirements before embarking on the decision to implement ERP for their businesses. This requirement should guide their choice of vendor and project consultant that will be engagedin the implementation.

2) Strong Internal Project Management Team: Apart from ERP vendor and project consultant, top management should set up her own in-house monitoring team. This in-house monitoring team works directly with the vendor and project consultant. The team should be empowered in order to have teeth to be able to manage the project

scope which will have to do with the budget, customization and project timeline. In case, the team does not have the teeth then the project has failed before it begins.

3) Reduce over Customization: When ERP is over-customized irrespective of the solution it provides then it will lead to abandonment by users because many users will not be satisfied with it. Thus, generic and medium customization systems are the most preferable for smooth and successful implementation.

4) Top Management Commitment: All the stakeholders that were used as study respondents identified that top management commitment is vital for the successful ERP implementation. This top management commitment implies upper management level not only by decision making but their involvement in the implementation activities.

5) Provide for Change Management: Top management should be ready for any changes that the implementation of ERP will cause during and post. ERP projects will facilitate massive business procedural changes which will affect the day to day running of the business. Hence, change management is vital to the successful implementation of ERP in any business environment.

6) Provide the Necessary Time and Resources for Training: Top management must prepare all necessary need and resource for comprehension of the workability of the ERP. Different business unit specific needs which will allow sufficient time and environment for developing and delivering training programs to ensure successful implementation should be made available by top management.

6.4.2 Recommendation for Project Managers/Consultants

1) Business Understanding: Project managers and consultants should possess the necessary comprehension on the knowledge of the business procedure which will enable them to make an adequate plan and design for the implementation. This comprehension will enable them to properly have the business requirements and plan towards it. They should be able to put together a plan on business requirements which will enable successful implementation.

2) They must study ERP implementations in other businesses in order to be able to network with other world class businesses.

3) They must set achievable expectations for the SMEs businesses.

4) They must document all customization.

5) The robust design solution that will take care of any unexpected situations.

6) Training and Re-training should be done several times during and post the implementation phases.

7) They must be prepared to maintain these modifications as the software vendor releases new versions of the software.

8) They must communicate in clear term date of various phases such as old system decommission and go-live.

9) They must communicate in details the various new business processes and differences with the old business processes.

10) They must audit processes and business system transactions in order to ensure workability.

11) They must create a good estimate of budget implementation while tight control should be ensured.

12) They must ensure that no cut costs are done in vital phases such as project management, training, and change management.

13) They should provide user/business specific tools and application such as mobile user linkage with the ERP.

6.4.3 Recommendation for SMEs IT Personnel

1) They must be actively involved in the implementation project team

2) They must have full comprehension of the business strategy.

3) They must design appropriate business IT strategy for the implementation.

4) They must have a business specific ERP strategy.

5) They must design business specific project scope

6) They should ensure that the business is prepared for process changes and adjustment to the ERP by applying the proper techniques, strategies and change management

7) They must create active communication mechanisms with both staffs and customers.

8) They should have good interactions with the project team and top management.

9) They should hire a third party in order to perform business readiness/adjustment assessment.

10) They should be well trained and educated by the vendor and consultant in other to handle technical aspect of the ERP after the post go-live.

6.4.4 Recommendation for ERP Users'

1) Selected users should be part of the implementation project team
2) They should outline the proper business procedure.
3) They should give details customization
4) They should communicate and interact with their customers, implementation project team, and consultant.
5) They must have adequate comprehension of the implemented system.
6) They must test the system critically before go-live.
7) They must give feedback on the system after go-live.

6.4.5 Recommendation for SMEs Customers'

1) Selected customers should be part of the implementation project team.
2) They must have adequate comprehension of the implemented system.
3) They should communicate and interact with the ERP users' to comprehend the workability of the system.
4) They must be educated on the system and new business procedure before go-live.

5) They must give feedback on the system after go-live.

6.5 Limitation of the Study

This current study as proposes a framework for the successful implementation of ERP in SMEs which implications have been discussed extensively in the previous section while this section pinpoint some limitation identified in the study. The study is specifically tailored towards SMEs were five categories of study respondents' namely SMEs top manager, users, IT personnel, ERP consultant, and customers are the selected. However, data are only collected from SMEs within the northern region of Malaysia whereas the business type and nature are not of major concerns in this current study. Likewise, the study made use of qualitative research approach whereas mixed research approach (qualitative and quantitative) can be used for comprehensive finding. Thus, there may be needs to further investigate each of the identified factors in this study quantitatively in order to established significance with successful ERP implementation in SMEs.

6.6 Future Work

There is still further work enveloped in this study which can be developed as different studies. This section discusses potential further works based on the previously discussed limitations of the study. Firstly, a comparative study can be done in order to investigate ERP implementation factors based on businesses in two different countries. This will further prove if factors identified in a country are consistent with other countries. Likewise, business type and nature specific investigation can be done where examination can be done to show that the framework is generic for implementation in any business types and natures. In addition,

mixed data collection research approach can be used to comprehensively investigate the study in order to further establish the study findings.

6.7 Conclusion

In summary, this study has explored ERP implementation framework for SMEs whereas the framework reduce high degree of complex organization changes and enhance successful ERP implementation. This study make used of qualitative one-on-one in-depth interview research design. There are sixty respondents for this study from five different positions such as I.T personnel, ERP constants/Project Manager, ERP users, top management and customer. Those sixty respondents are from twelve different companies within northern region of Malaysia. The gender disparity of 60% to 40% ratio of male to female respondents was observed. This study identified eight CSFs and seven CFFsthat influence successful implementation of ERP in SMEs. The study has been able to propose an ERP implementation framework specifically targeted at the SMEs. The framework strengthens the position of existing ERP implementation framework through explication of the importance of ERP implementation in SMEs. This study specifically argues that factors such as funding, time and customization are very imperative for the successful implementation of ERP in SMEs which are missing in many past studies.

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APPENDIX I

IMPLEMENTATION FRAMEWORK OF ENTERPRISE RESOURCE PLANNING FOR SMALL AND MEDIUM ENTERPRISES IN NORTHERN STATES OF MALAYSIA

Dear Respondent,

I am a Ph.D. candidate from Universiti Utara Malaysia, Malaysia. My research work is on Implementation framework of Enterprise Resource Planning (ERP) for Small Enterprises (SEs)in Malaysia. I am conducting a research on the appropriate framework for implementing ERP in Malaysia SEs. The goal of this research is to gain insight into the cultural perceptions to enhance success in the implementation of ERP in Asia countries as a whole and Malaysia in particular. The Malaysia's perceptions will go a long way in reshaping how ERP can be deployed and implemented effectively and appropriately to suit SEs profitability and productivity.

The interview will take about one hour and it will be noted and recorded. Information provided during the interview will be used solely for the research purpose, as part of the researcher's PhD thesis.If you have any questions regarding this research, please feel free to contact us at OYA graduate school of business, Universiti Utara Malaysia. You can send an email at: moonthiak@hotmail.com for any additional information may require.

We appreciate your participation in this research project.

Sincerely,

Ang Moon Thiak
Doctoral Candidate

APPENDIX II

INTERVIEW GUIDE

PART A: ICEBREAKING QUESTIONS

What is your personal mission statement?
Tell me about an influential person in your career or education.
What is your greatest achievement outside of work?
Would you rather work with information or with people?
What motivates you?
How do you work under pressure?

PART B: DEMOGRAPHIC DETAILS

Name:
Job Designation:
Company Name:
Company Location:
Year of Experience:
Gender:
Educational Background:
Date:
Time:
Place:

PART C: INTERVIEW I

Q1 Can you please explain your role or position in this company?

Q2 What kind of Enterprise Resource Planning (ERP) software do you use/supply the customers/are you using?

Q3 How do you help your customers in ERP implementation? (ERP consultant/Project Manager)

Q4 How do you/your customers' benefits from ERP implementation?

Q5 Do you have any direct benefits from the ERP implementation? (Customers)

Q6 What do you think are the critical success/failure factors in ERP implementation?

Q7 Why do you think they are critical?

Q8 According to our research from reference books and journals, we have identified some critical success/failure factors in ERP implementation, what do you think about these factors (listed below). Do you agree or not? Why?

Q9 If the answers of Q6 are included in the above factors, we are going to leave them out, and then we will ask the respondents what they think of the remaining factors.

Q10 How importance is each factor according to your opinion? Why?

Q11 Can you please rank the CSFs/CFFs according to their importance in ERP implementation using 1 = strongly determine the success, 2 = determine the success, 3 = necessary for success?

Q12 How can you describe your ERP implementation in term of the following:

a) Information Quality: Up to date database, Easy to understand, Timely information, Suitable with users' requirement, Availability, Relevant, Useful

b) System Quality: Flexibility, Easy to use, Reliable, Accurate, Efficiency, Open system, Customization, Feature

c) Service Quality: Good service, Reliable, Hardware & Software up to date, Users' need, Good knowledge

d) Satisfaction: Customer satisfaction, Time efficiency, Business process improvement, Decision support, Decision quality, Task performance, Problem identification, Accurate interpretation, Employee creativity

e) Organization Impact: Create competitive advantage, Business innovation, Product differentiation, Business growth, Application portfolio, Change in organization process, Increased capacity, Cost reduction, Staff requirement, Overall productivity, Improved outcome/output

Q13 How can you describe the impact of ERP implementation to your company productivity / job efficiency / customers' needs?

PART D: INTERVIEW II

Q1 Based on literature review and first interview conducted previously, this proposed framework was developed (Present the proposed framework). As an expert, what is your view about the practicality of this proposed framework?

Q2 What are possible weaknesses and limitations you foresee in the proposed framework?

Q3 Can you please give further area of improvement on the proposed framework?

Q4 How best can your rates the proposed framework in term of simplicity, clarity, cost and time-saving?

APPENDIX III

SUMMARY OF PARTICIPENTS' BACKGROUND

ID	Position	Company Description	Company Location	Year of Experience	Gender	Educational Background
01	User	S & O Electronics	Kedah	10	Female	BSc
02	Top Management	S & O Electronics	Kedah	20	Male	BSc
03	IT Personnel	S & O Electronics	Kedah	8	Male	BSc
04	Project Consultant	S & O Electronics	Kedah	12	Male	MSc
05	Customer	S & O Electronics	Kedah	3	Female	Diploma
06	User	Jin Bin Sdn Bhd	Kedah	13	Female	BSc
07	Top Management	Jin Bin Sdn Bhd	Kedah	14	Male	BSc
08	IT Personnel	Jin Bin Sdn Bhd	Kedah	4	Male	BSc
09	Project Consultant	Jin Bin Sdn Bhd	Kedah	13	Male	BSc
10	Customer	Jin Bin Sdn Bhd	Kedah	6	Female	BSc
11	User	KS Northern	Kedah	16	Female	BSc
12	Top Management	KS Northern	Kedah	23	Male	BSc
13	IT Personnel	KS Northern	Kedah	13	Male	BSc
14	Project Consultant	KS Northern	Kedah	17	Male	MSc
15	Customer	KS Northern	Kedah	8	Female	Diploma
16	User	Worldline Sdn Bhd	Penang	10	Female	BSc
17	Top Management	Worldline Sdn Bhd	Penang	18	Male	BSc
18	IT Personnel	Worldline Sdn Bhd	Penang	13	Male	BSc
19	Project	Worldline Sdn Bhd	Penang	10	Male	MSc

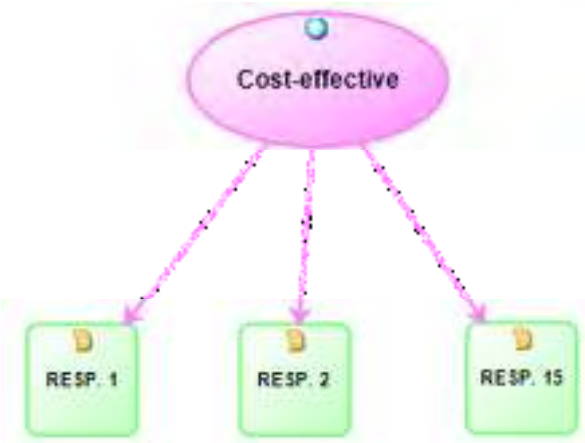
	Consultant					
20	Customer	Worldline Sdn Bhd	Penang	6	Female	Diploma
21	User	Adatech Sdn Bhd	Penang	15	Female	BSc
22	Top Management	Adatech Sdn Bhd	Penang	21	Male	BSc
23	IT Personnel	Adatech Sdn Bhd	Penang	4	Male	BSc
24	Project Consultant	Adatech Sdn Bhd	Penang	4	Male	MSc
25	Customer	Adatech Sdn Bhd	Penang	6	Female	Diploma
26	User	Chi-Tien Electronic	Penang	13	Female	Diploma
27	Top Management	Chi-Tien Electronic	Penang	16	Male	BSc
28	IT Personnel	Chi-Tien Electronic	Penang	7	Male	BSc
29	Project Consultant	Chi-Tien Electronic	Penang	9	Male	BSc
30	Customer	Chi-Tien Electronic	Penang	6	Female	Diploma
31	User	B.T Engineering	Perak	4	Female	BSc
32	Top Management	B.T Engineering	Perak	20	Male	BSc
33	IT Personnel	B.T Engineering	Perak	8	Male	BSc
34	Project Consultant	B.T Engineering	Perak	12	Male	BSc
35	Customer	B.T Engineering	Perak	3	Male	BSc
36	User	SOK KEN Plastic	Perak	3	Female	BSc
37	Top Management	SOK KEN Plastic	Perak	14	Male	BSc
38	IT Personnel	SOK KEN Plastic	Perak	5	Male	BSc
39	Project Consultant	SOK KEN Plastic	Perak	9	Male	BSc
40	Customer	SOK KEN Plastic	Perak	5	Female	BSc
41	User	Sin Yoon Loong	Perak	9	Female	BSc

42	Top Management	Sin Yoon Loong	Perak	14	Male	BSc
43	IT Personnel	Sin Yoon Loong	Perak	5	Male	BSc
44	Project Consultant	Sin Yoon Loong	Perak	5	Male	MSc
45	Customer	Sin Yoon Loong	Perak	3	Female	Diploma
46	User	Chong AIK	Perlis	9	Female	BSc
47	Top Management	Chong AIK	Perlis	13	Male	BSc
48	IT Personnel	Chong AIK	Perlis	8	Male	BSc
49	Project Consultant	Chong AIK	Perlis	6	Male	BSc
50	Customer	Chong AIK	Perlis	4	Female	BSc
51	User	Bintong Sdn Bhd	Perlis	6	Female	BSc
52	Top Management	Bintong Sdn Bhd	Perlis	12	Male	BSc
53	IT Personnel	Bintong Sdn Bhd	Perlis	6	Male	BSc
54	Project Consultant	Bintong Sdn Bhd	Perlis	4	Male	MSc
55	Customer	Bintong Sdn Bhd	Perlis	4	Male	Diploma
56	User	Min Honky Auto	Perlis	6	Female	BSc
57	Top Management	Min Honky Auto	Perlis	8	Male	BSc
58	IT Personnel	Min Honky Auto	Perlis	5	Male	BSc
59	Project Consultant	Min Honky Auto	Perlis	10	Male	MSc
60	Customer	Min Honky Auto	Perlis	2	Female	Diploma

APPENDIX IV

THEME AND SUBTHEME RESPONDENTS MAPPING

Costing -effective



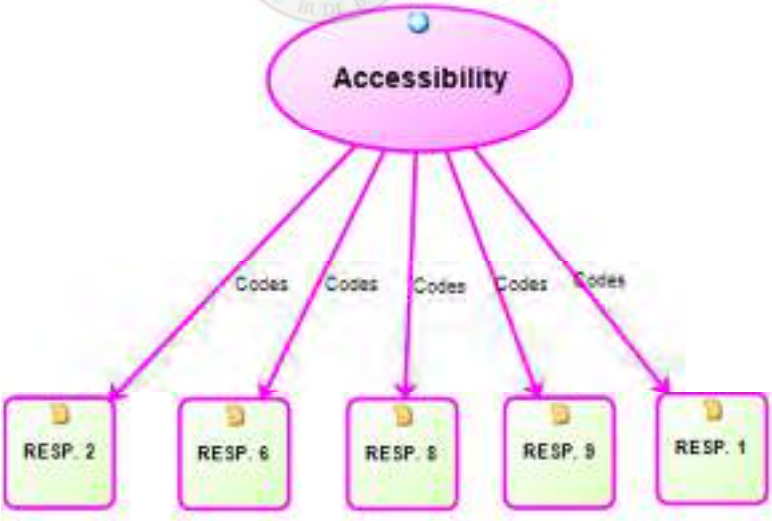
Increased Productivity

More Customers

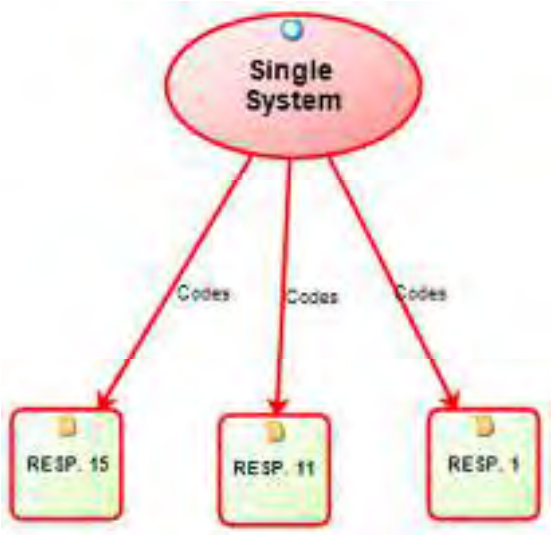
Time & Resources Saving

Reduced Personnel

Accessibility

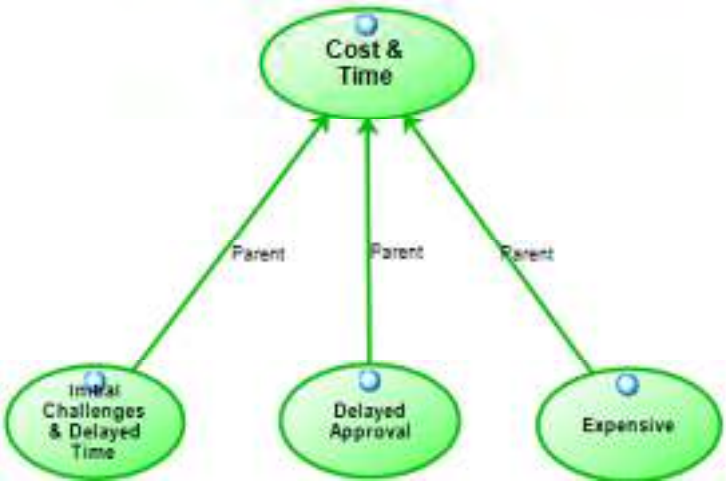


Single System

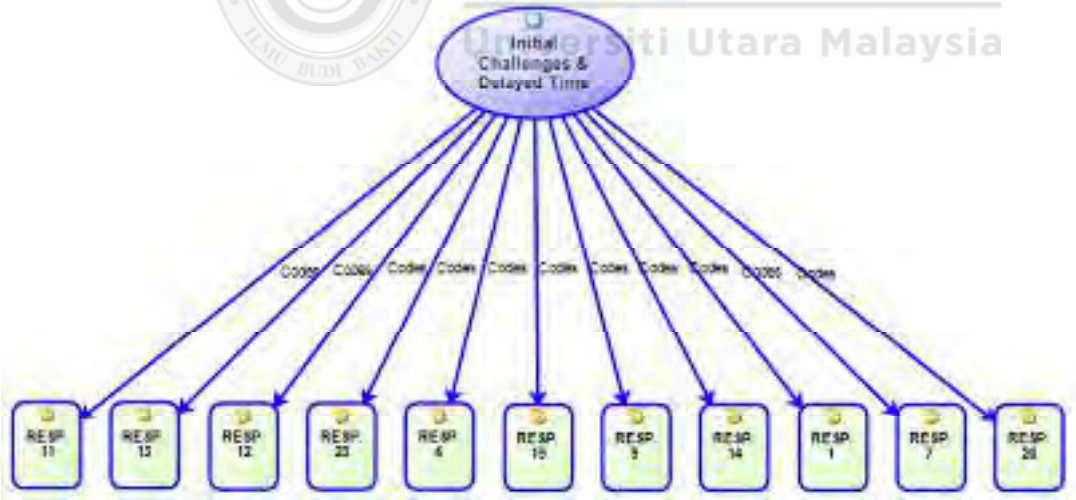


Flexibility

Cost & Time

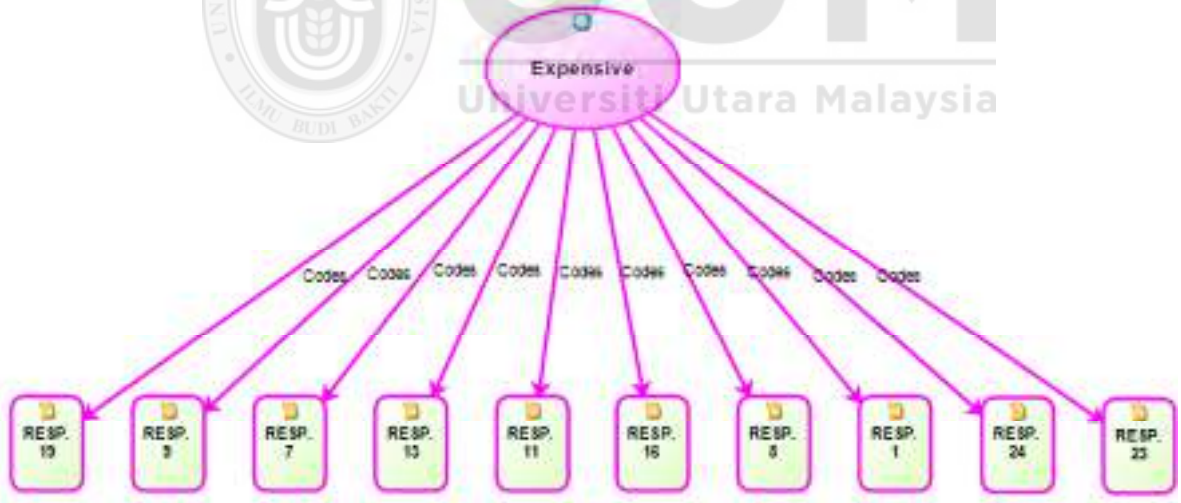


Initial Challenges & Delayed Time



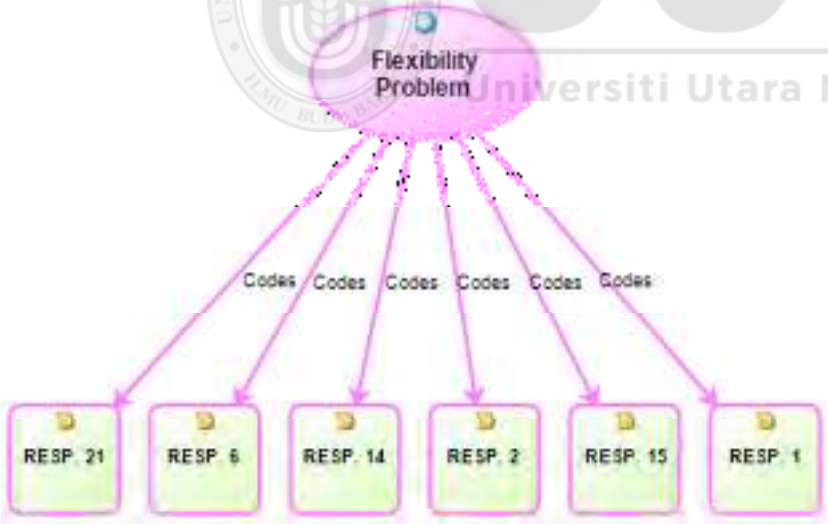
Delayed Approval

Expensive



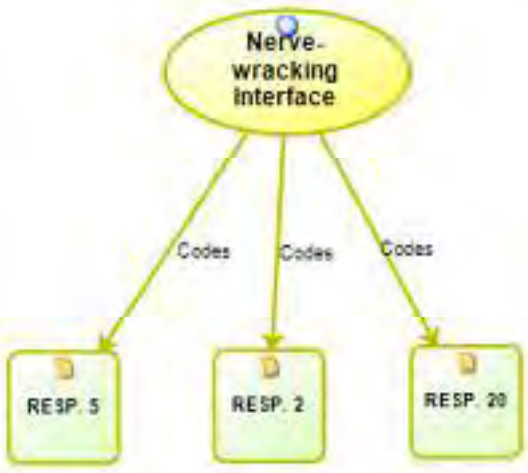
Upgrading Challenges

Flexibility Problems



Unfriendly Interface

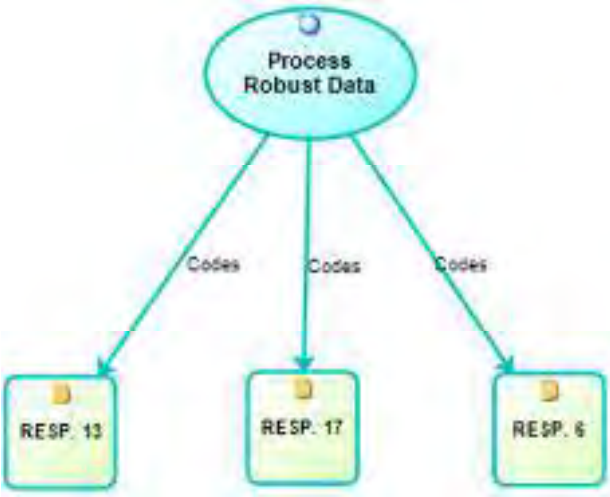
Nerve Wracking Interface



One Login Details

Web Monitoring

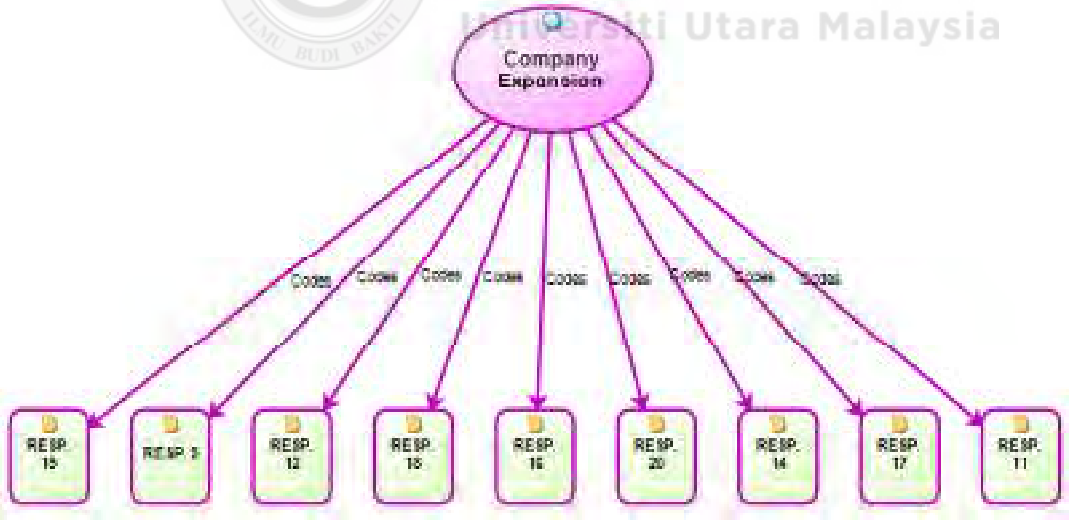
Process Robust Data



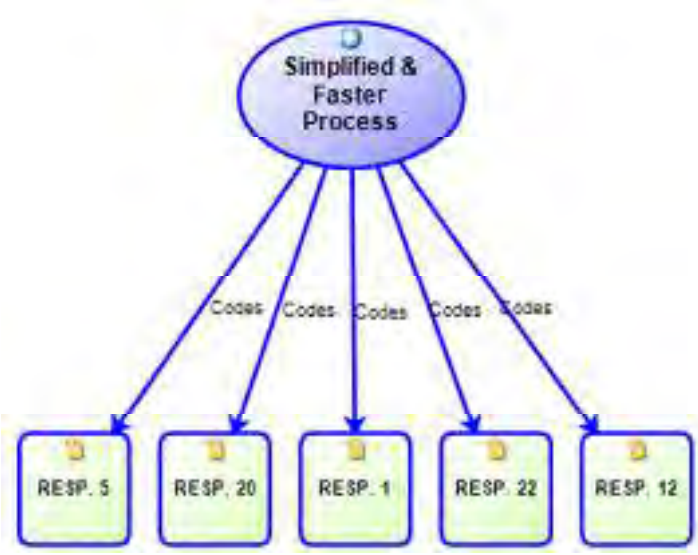
Competitive Advantage

Improved Business Process

Company Expansion



Simplified & Faster Process



Proper Handling

Friends Interface & Feedback

Experienced Personnel

Engaged ERP Consultants & Help Agents

Upgrade the System

Formal Training

Self Training