THE RISK ANALYSIS OF SYSTEM SELECTION AND BUSINESS PROCESS RE-ENGINEERING TOWARDS THE SUCCESS OF ENTERPRISE RESOURCE PLANNING PROJECT FOR SMALL AND MEDIUM ENTERPRISE

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I would like to dedicate this dissertation to my lovely family.

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ABSTRACT

This study contributes to the discussion on Enterprise Resource Planning (ERP) implementations in the context of small and medium size enterprise (SME). Ignorance of ERP implementation risks would seem to be the major challenge for SMEs. Several risk factors have been identified to help enterprises better manage their ERP projects; hence this study seeks to assess the impact of risks in the ERP implementation phase. The implementation of an ERP software package involves a mix of business process changes and software configuration to align the software with the business processes. Small and medium enterprises (SMEs) have restricted resources, budgets, and great sensitivity to costs; thus, ERP implementation is such a huge concern for a small enterprise. An SME needs to contemplate numerous details; primarily the cost factors of implementation before taking the first step in implementation of an enterprise resource planning (ERP) system. One of the important factors influencing success or failure of an ERP project is the cost factor and it is critical to find ERP implementation cost factors which are designed especially for SMEs. Risk is a problem that has not yet occurred, but which could result in some loss or threaten the success of the project if it did. This study chooses the critical adequate system selection risk and business process re-engineering risk of the ERP implementation projects which have been identified and designed for the framework. The purpose of this study is to identify and assess relations among these risk factors of ERP through the SMEs that impact upon cost reduction in general, as well as cost reduction on the project's success. The instrument used for data collection is a questionnaire. The questionnaires were distributed in the I.M.D Company (an SME) in Iran. Respondents are staff members who have knowledge of the ERP and data from questionnaires have been previously analysed with SmartPLS software.

ABSTRAK

Kajian ini menyumbang kepada perbincangan mengenai pelaks annan Enterprise Resource Planning (ERP) dalam konteks kecil dan sederhana saiz. Kaijan literature menunjukkan wujudanya keperluan terhadap kepentingan pemahaman mengenai risiko pelaksanaan ERP ke atas IKS. Oleh yang demikian beberapa faktor risiko telah dikenal pasti untuk membantu perusahaan untuk menguruskan projek ERP mereka yang lebih baik supaya dalam kajian ini cuba bagi menilai risiko ERP dalam fasa pelaksanaannya. Terdapat banyak faktor-faktor kos pelaksanaan yang perlu diambil kira sebelum. Perusahaan industry kecil dan sederhana (IKS) mempunyai bajet kewangan dan sumber yang terhad yang mana ianya amat berisiko bagi membangunkan sesebuah ERP yang memerlukan kos yang tinggi. Disebabakan itu, kajian ini memilih risiko pemilihan sistem yang kritikal dan risiko kejuruteraan semula proses perniagaan pelaksanaan ERP. Tujuan kajian ini adalah untuk mengenal pasti dan menilai hubungan di antara faktor-faktor risiko ERP melalui IKS yang memberi kesan kepada pengurangan ke atas sesebuah project ERP kejayaan. Instrumen yang digunakan untuk pengumpulan data ialah soal selidik. Kajian soal selidik telah diedarkan di kalangan pekerja di Syarikat IMD iaitu sebuah syarikat IKS di Iran. Responden adalah pekerja yang mempunyai pengetahuan mengenai ERP dan data daripada soal selidik dianalisis dengan perisian SmartPLS.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Today's business environment is drastically changing. Enterprises are increasingly confronted with issues such as: globalization tests, international rivalry, technological difficulty, and growing customer focus. Firms must expand product portfolios, decrease time-to-marketplace issues, reduce product-life cycles, and generate better quality productions by means of, specifically: quick reply, reduced costs, and more customization to meet market requirements. Industry operation and firms concentrate on their core competences and collaborate with other companies having corresponding resources and knowledge. Also, cooperation or partnership has become a common attitude, as well as an achievement element, in today's business arena. Firms that move closer to a completely collaborative model must enhance their own business procedures and practices accordingly. The critical in-house information that companies earlier fervently protected must also be shared by them with their suppliers, customers, and distributors. Furthermore, jobs within the company must be designed to improve employees' ability to produce and communicate precise information in a well-timed manner. As a result, companies are focusing more and more on Enterprise Resource planning (ERP) systems in order to fulfil these objectives (Iskanius, 2010).

Enterprise system can be determined as: “commercial software packages that enable the integration of transaction-oriented data and business processes throughout an organization (and perhaps eventually throughout the entire inter-organizational supply chain)” (Markus and Tanis, 2000). “Supply chain management (SCM), Enterprise Resource planning (ERP), customer relationship management (CRM), and e-procurement systems make up the Enterprise System (ES)” (Ramdani *et al.*, 2009).

The implementation of an enterprise system (ES) is typically a time-consuming and difficult process, whereby the firm needs to remove various obstacles so as to achieve success as well as experiencing numerous challenges. Obviously, the result of ES implementation can be either a total “flop” in the outcome of the company’s bankruptcy, or a complete success, as reflected in the growth of the firm’s profitability. Subsequently, it is imperative to inspect ES implementation projects and to attempt to determine the problems that impact upon the results of this implementation. Specifically, so as to avert traps and reduce the risk of failure, it is significant to investigate the problems faced by the Activists and learn from their experiment.

Diverse levels of generality which are portrayed through various problems are proposed in prior literature studies. The difficulties that materialise during the implementation process are usually due to certain problems, such as shortage of benefits. Other acknowledged difficulties are distinct adversities faced throughout the implementation process, as well as the cause of additional difficulties(O'Leary, 2000).

Business processes not being redesigned or system shortcomings are some of the examples of such difficulties. Also, various causes may also have those source difficulties, which indicates that there may be a series of cause and effect relationships among difficulties (Wright and Wright, 2002). As enterprises encounter certain difficulties and problems because of rapid changes in the business environment, they are inclined towards the requirement for a system that assimilates

their functions towards the attainment of one system. These systems are known as Enterprise Resource Planning (ERP) systems (Soja, 2006).

All the resources, information, and activities required to complete business processes are coordinated by ERP, which is an information stem designed for this. The ERP system is a mercantile software package which allows the assimilation of transactions-oriented data and business functions during an enterprise. It holds the possibility of being able to tremendously improve organizational performance and creating a competitive advantage (Goni *et al.*, 2011). By the impressive utilization of information technology, they let enterprises share the data in the firm with third parties such as vendors and customers. Assimilating the functions of the business enterprise-wide is the target of the ERP systems. This is achieved during enabling of the information stream across diverse processes and within departments in the enterprise. ERP systems can create the prospect for various sections of a firm to communicate with each other and also share their data, because they have one single database (Soja and Paliwoda-Pekosz, 2009). All the resources, information, and activities required to complete business processes are coordinated by ERP, which is an information stem specifically designed for this.

To attempt to change the demand of customer favour in a time of international and local competition, enterprise resource planning (ERP) plays a role with regards to a new strategy of product development cycles. It is frequently taken as being one of the answers for their survival. To counter a susceptible financial market, ERP provides a flexible answer with effective abilities to succeed (Taylor and Murphy, 2004).

"SMEs are assumed to be key economic players and a powerful source of national, regional and local economic progress" (Taylor and Murphy, 2004). SMEs differ from large organizations in significant ways which ultimately impact upon their information-search practices (Ramdani *et al.*, 2009). Small and Medium sized Enterprises (SMEs) are regarded as being critically important for numerous

economies. Some 51% of all employment comes from firms with less than 500 employees (Snider *et al.*, 2009).

ERP implementation remains one of the most substantial hurdles for IS practitioners over the last 10 years. While numerous enterprises are drawn by the possibility of enormous benefits anticipated from the implementation of an ERP system, others can be discouraged by different horror stories that dot the development of the still new enterprise system industry. ERP implementation projects need enormous investment levels and involve quite substantial perils that are necessitated to be lessened in a suitable manner (Uwizeyemungu and Raymond, 2010).

1.2 Problem Background

Being unchallenged in the economy is one of the important qualities of small and medium enterprises (SMEs). Some of the barriers confronting all companies, regardless of size, are specifically: globalization, internationalization of markets, e-commerce and the knowledge economy. Completion area is critical for organizations; if they want to survive and become more competitive in their environment, they should use information technology (IT) and information systems (IS). The enterprise resource planning (ERP) system market has changed into a rapidly-growing sector of industry having enormous numbers of employees, namely, IS/IT (Poba-Nzaou *et al.*, 2008). Information system costs are dropping in addition to the big business markets becoming crowded or saturated. Thus, a rising number of SMEs are currently implementing ERP systems. Because of their explicit features, SMEs seem to detect it as being more problematic than do large firms to resolve disappointments in the ERP implementation (Muscatello *et al.*, 2003).

Small and medium enterprises (SMEs) have restricted resources, budgets, and great sensitivity to costs. SMEs need to contemplate numerous things; primarily

among these is the cost of implementation before taking the first step towards implementation of an enterprise resource planning (ERP) system. Risks and cost can be enormous for both the ERP implementation, and the implementation phase which involves considerable amounts of hidden costs that impact on project success during the ERP life cycle (Aloini *et al.*, 2007). Estimating indirect costs beforehand is problematic and, as a result, inaccurate and optimistic budget and schedule forecasts cause most ERP implementations to flop.

Investigators have generally given less attention to the implementation of IT by SMEs. This is especially correct when considering ERP implementation by SMEs. Most investigative discoveries cannot be simply incorporated into SMEs because of their specific features; until now, ERP systems have focused on the big business sector. Some researchers such as Tomas, (2005) have suggested the application of risk management at the implementation stage in an attempt to decrease the risks involved with implementing ERP systems. However, this stresses the proficiency of risk management when it is presented at the earliest possible chance in the life cycle of the system in question, when planning issues are most essential and the criteria for system selection is identified.

The failure of managers to accurately predict availability and handle the risks concerned in their projects are some of the reasons frequently cited for any software project failure. “Most project managers assume risk management processes as involving additional work and cost; hence, risk management processes are frequently removed if there is a project schedule gaffe (Kwak and Stoddard, 2004).

Different ways have to enhance the rate of ERP project success introduction have been suggested in the past but, regrettably, without much effect. The nature of IT project risks was determined by tactical needs for projects, repetition of failure, etc. Based on research by Aloini in 2006, it can be seen that IT projects have a high failure rate (Aloini *et al.*, 2007). ERP implementations face a tremendous risk of failure by the shortcoming of a definite cost factors model for ERP implementation (Haddara, 2011).

1.3 Research Questions

1. What are the risk factors for ERP implementation?
2. What relations are there among risk factors of system selection and BPR on cost reduction in ERP implementation based on SME?
3. What relations are there between cost reduction and project success in an ERP implementation base on SME?

1.4 Objective of the Study

In order to carry out this research, three objectives are considered:

1. To identify the risk factors for ERP implementation.
2. To identify the relations among risk factors of system selection and BPR on cost reduction in ERP implementation based on SMEs.
3. To identify the relations between cost reduction and ERP implementation success.

1.5 Significance of the Study

This research concentrates on enterprise resource planning (ERP) implementation and the influence of risks on its implementation in SMEs. The utilization of ERP by SMEs has increased in recent years. Hence, the confirmation of elements that have an effect on the implementation of ERP has become the centre of consideration (Chien *et al.*, 2007). Implementation of ERP creates an increase in operational competence and efficiency although it involves enormous costs, hence making a decision about implementing ERP has to be considered prudently. It should

be noted that ERP plays an important role in modern business, by reason of ERP's ability to combine the flow of material, finance, support organizational strategies and information (Wei *et al.*, 2005).

A successful ERP project includes, namely: managing the change of business process, choosing an ERP system, implementing the ERP system, and testing the practicality of the ERP new system. Owing to a number of factors, including: the complication of the business environment, the restrictions in existing resources, and the variety of ERP alternatives, system selection of ERP is monotonous and time consuming. Due to the substantial financial investment involved, as well as potential risks and profit, the emphasis of a related ERP system selection cannot be overemphasized. This corroborates the idea that encasing an ERP system is much more than having another information technology tool; it is a resolution concerning how to shape the organization of the business (Muscatello *et al.*, 2003). For successful implementation of ERP, a variety of risk factors need to be considered. Risks associated with business process re-engineering, software and human resources should be taken into account according to the progress of ERP implementation (Huang *et al.*, 2004).

Unfortunately, too many firms implement their ERP systems hastily; they carry out installation without sufficient knowledge about their business or the need for compatibility with overall company strategies and goals. Muscatello, et al (2013) stated that "Smaller firms, with their limited resources, are less likely than their larger counterparts to survive or quickly overcome a failed implementation of an expensive ERP system. Therefore, it is extremely important to gather, analyse and disseminate information that will help them to choose appropriate ERP systems and then implement these projects successfully".

The risks associated with ERP projects may be able to demarcate a possible problem, i.e., risk is a problem that has not yet happened but which could result in some loss or threaten the success of the project if it did (Soja and Paliwoda-Pekosz, 2009). There are many research studies on ERP implementation in large

organizations, but still relatively little knowledge about the usage of the ERP system in small to medium enterprises. Previously, complicated and costly ERP systems were not used by most firms; with just a few large organizations having the capacity to implement these systems. But recently, small to medium enterprises have shown a lot of attention towards the ERP system due to its effectual outcomes in profits when compared with other diverse organizations. The automatic process systems will enhance the proficiency of organizational activities thereby creating improvements in the organization (Carton, 2004).

1.6 Project Scope

Presently, the key area which distinguishes countries as being either developed or developing is economics. A system that can be taken as a parameter in the success of a business is enterprise resource planning. In order to confront global challenges, one of the solutions for Small and Medium Enterprises (SMEs) is Enterprise Resource Planning (ERP). Many benefits can be realised through an effectual ERP implementation, starting with the moat general theory, for example, decrease in cost, productivity enhancement and quality enhancement.

SMEs which follow essential rules in economic issues are focused on in the research. The SME firm which is the sample of this research is either agreeable to or in the process of implementing the ERP. One of the effectual factors in SMEs that has a high capability for utilizing ERP in their jobs is the staff. Throughout the ERP implementation stage, one of the elements which will have considerable effect on the failure or success of an ERP project is the risk of ERP implementation. Since an ERP project might be of higher risk, the costs of an unsuccessful ERP implementation can be high and cost is accordingly a very important factor. The study concentrates on the impact risk of ERP implementation on cost reduction and ERP project success.

For this investigation, an organization in south Iran is selected as representation of a company in a developing country. The Iran I.M.D Company is recognized as an SME which has 460 employees in 2 sections, namely, a central office and a factory, which exist in separate locations. The central office includes Financial, Human Resource, Information, Technology, Manufacturing, Marketing, Procurement, Sales, as well as Service and Stores departments. Each department consists of employees and a manager. The instrument used for data collection is a questionnaire. This study has chosen to use the quantitative method so questionnaires are distributed in each department; the respondents being staff who have knowledge and experience of ERP. Data from the questionnaire is analysed with SmartPLS software.

1.7 Summary

In this chapter, an introduction about the main points of the project has first been discussed. The problem background and statements have also been mentioned in order to clarify introduction of the project, and to explain why this project has been chosen. The objectives, scope and importance of this project have also been described.

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