

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.0 Research Background**

With the increasing convergence of international markets, a greater number of firms in Malaysia are entering the global arena. As these firms compete in the competitive market (both domestic and global), they are forced to make decisions on various aspects of information systems investment and adoption that will accommodate their needs.

Arguably, based on the findings from many IT researchers and practitioners, Enterprise Resource Planning (ERP) systems has been marked as one of the most profoundly used business solution in the recent years (Wagner et al., 2006; Ehie and Madsen, 2005; Beheshti, 2006). The ubiquitous of ERP is partially because of their promises in transferring the best practices embedded with the technology's design itself, integrating organizational business processes, and sharing information across functional areas through a common database.

With such high expectations, the ERP system has been embraced by most large and medium firms worldwide (Holland and Light, 1999; Ragowsky and Somers, 2002; Al-Mashari et al., 2003). Davenport (2000) even declared that ERP is a prerequisite for success in the 21st century. However, while some firms have achieved impressive benefits from their ERP systems, others have experienced difficulty in gaining the benefits they expected.

The majority of the existing ERP literatures focus on the selection and

implementation of ERP but not on the impact of ERP's post-implementation (Dong et al., 2002; Esteves 2001; Jacobs and Bendolly, 2003). According to Kimberling (2010), the majority of large ERP software implementations are executed as IT projects rather than strategic business initiatives. Once the firm has allocated and established the IT budget, a significant amount of investments is made and an ERP implementation team is assembled. A "go-live" date is decided upon. The metric of success for the ERP implementation is: the project is on-time and on-budget and the ERP system is being used. However, the true return on investment, or ROI, is an afterthought. As companies begin to scrutinize and measure their return on investment on ERP, many are recognizing that they have made a substantial IT investment and undergone considerable organizational change to, in effect, alter the face of their IT infrastructure, with minimal performance improvements in their core business operations. There is no real transformational impact where ERP is embedded into the company's DNA.

This study will focus on organizational and technological impacts of ERP systems once the system has gone live. This research attempts to quantify the critical success factor that affects ERP implementation. This research also focuses on post implementation and the ERP's true benefit where firms internalize the transformational benefits of using information system for the long run after all the hype and fever has died down.

## **1.1 Motivation of the Study**

ERP is now being considered as the minimal entry cost for running a respectable business. It is even dubbed as a prerequisite for a business to be success in the industry. In some instances, it acts as an important “communication tools” for connecting to other enterprises in a network economy to create “business to business” electronic commerce (Boykin, 2001; Davenport, 2000; Holland and Light, 1999). In order for the firm to realise these ERP benefits, it has to undergo extensive assimilation of the ERP systems in the firm. There are many studies and researches on ERP implementation that has been carried out by IS practitioners and IS academic researchers. For instances DeLone and McLean (1992, 2003) has developed and enhanced the model of information system success on ERP systems success; Al-Mashari (2000, 2003) focused on a process change-oriented model for ERP application; Wei, K.K. (2008) studied how leadership affects ERP implementation by fostering the desired organizational culture. However, the research on ERP assimilation (where ERP is truly embedded into core business process) is scant especially at the post implementation phase of ERP system. This is an important determinant to ascertain ERP’s influence on business benefits in the long run. Thus, it is of significant interest to senior management of organisations, IS practitioners and IS academic researchers to know more about the post implementation period of ERP systems, the business benefits that result during the period, and how and why these consequences occurred.

Similarly, research that investigates the ERP experiences in developing countries is very limited, with most of ERP researches confined to Western countries with a serious lack of Asian focus. It is important to focus on these countries given the growing importance of this region as a global business base. By examining ERP in Malaysia (a developing country), we are able to understand the differences in terms of the determinant of ERP post implementation benefits in contrast with a developed nation. The Malaysian government has implemented numerous policies and strategies to enhance the growth of the industries predominantly through IT initiatives. This can be seen in the policy, "Malaysia, Policies, Incentives and Facilities for Malaysian Firms" that is issued by the Ministry of International Trade and Industry (MITI). Under this plan, government has allocated huge budget on the financial assistance scheme as "Grant for ICT Application". Local business firms can apply for the grant to implement an ERP system in order to improve and streamline their operational activities. It is with the hope that by using the ERP system, the firms will be able to increase their productivity and competencies in a local and global market.

From the theoretical perspective, many studies have developed models that examine the relative importance of technological, organizational and environmental factors in relation to ERP success. However, there is a lack of models that measure the factors in relation of the time frame of post implementation. Several process models and researches suggested that ERP impact on the organization may improve with time (Markus and Tanis, 1999; Ross and Vitale, 2000). Some argue that companies do not achieve the

anticipated ERP benefits after one year, but improves thereafter. Thus, this study sees the significance of empirically examining various factors in relation to the influence of ERP post-implementation impact to the organization. This will allow us to develop a more general and coherent theoretical framework.

In summary, this research will attempt to study the success factors of ERP implementation in developing country context and in relation to post implementation.

## **1.2 Research Problems**

The performance analysis for ERP systems has become one of the most important issues for both academic researchers and project managers. ERP is a large-scale system and it is not easy to measure the benefits of ERP.

There are various metrics in measuring the success of ERP implementation. However, many of them fail to agree on a unified and coherent metrics. In Byrd et al, (2005)'s study, they indicate that there are many studies that fails to provide a coherent measurement in the success of implementing ERP. In a review of past 40 research study in relation to IS success, as examined by Barua and Mukhopadhyay, (2000) they fail to find any concrete metrics in quantifying ERP benefits. In face with such difficulties, we adopt Barua's method in measuring the indirect benefits (intermediate benefit) of ERP implementation. The indirect benefits are the improvement of task efficiency and coordination due to standardization which will be much easier to quantify and understand.

Many academic researchers have published their findings in regards to the

determinants of ERP benefits disregarding the dimension of time. Such measurement can be put into a better perspective of the true benefit of ERP if the time factor is taken into account. This research will improve the reliability of the determinants of ERP success in the post implementation perspective. Therefore this study attempts to answer the generic issue on “***What are the determinants that influence the intermediate benefits of ERP system once the system has gone live?***” Specifically, the following research questions are addressed:

- 1) What is the impact of technological factor (IS Sophistication) on the ERP intermediate benefits (Coordination Improvements and Task Efficiency) post implementation?
- 2) What is the impact of organizational factors (Interdependence and Differentiation) on the ERP intermediate benefits (Coordination Improvements and Task Efficiency) post implementation?
- 3) What is the impact of the ERP intermediate benefits (Coordination Improvements and Task Efficiency) on overall ERP benefits for the company post implementation?

### **1.3 Objectives of the study**

There is no dispute about the fact that a company needs to implement a comprehensive ERP system in order to manage its image or reputation, create internal pride, gain the competitive advantages and retain its residents. This paper proposes and attempts to test the integrated model incorporating the IS Sophistication, the interdependence and differentiation among subunits, the ERP customization and the amount of time since ERP implementation simultaneously. The integrated model is drawn with reference to the Conceptual Model of ERP Implementation (Gattiker and Goodhue, 2005) and Dimensions of IT sophistication (Raymond and Pare, 1992). This study will focus on organizational and technological impacts on ERP intermediate and overall benefits. This research focuses on ERP post implementation stage, as it is more effective to obtain the long-term effect of the effectiveness of the software after the ERP has been successfully implemented.

The main objective of this study is trying to address the research problems and questions as mentioned above. Specifically, the objectives are as below:

1. To investigate the relationship between technological factors (IS Sophistication) and the ERP intermediate benefits (Coordination Improvements and Task Efficiency).
2. To investigate the relationship between organizational factors (Interdependence and Differentiation) and the ERP intermediate benefits (Cooperation Improvements and Task Efficiency).

3. To determine the significance of the ERP customization that influence the ERP intermediate benefits (Coordination Improvements and Task Efficiency).
4. To determine the significance of time elapsed after ERP implementation that influence the ERP intermediate benefits (Coordination Improvements and Task Efficiency).
5. To determine the relationship between ERP intermediate benefits (Coordination Improvements and Task Efficiency) that influence the overall ERP benefits for the company.



#### **1.4 The Scope of the study**

This research will attempt to study the determinants of intermediate benefit of ERP implementation among manufacturing firms in a developing country (specifically Malaysia). The measurement is carried out within the year of 2010. One of the key benefits of ERP is its ability to standardize data and business processes within the firm thus improving efficiency and coordination. Such benefits shall only be apparent if we focus on subunit within a firm (departmental analysis). Thus, this study will cover subunits within a firm.

#### **1.5 Contribution of the study**

##### **1.5.1 Theoretical Contribution**

This study offers two major contributions to the literature on IT innovation. First, this study will add the body of knowledge by showing how the organizational and technological factors influence the ERP intermediate and overall benefits. Our findings will enrich the theory on IT innovation by confirming that organizational and technological forces remain significant in the context of post implementation. Second, we extend prior research on IT adoption and implementation to the post-implementation assimilation phase.

Third, by examining the relative importance of various factors on the post implementation of ERP, this study advances knowledge on the contingency factors that could potentially affect the post implementation of ERP in organizations.

Fourth, by empirically testing the impact of these factors in new and different contexts relating to the post implementation of ERP, it enables this study to evaluate the consistency of the impact of various factors on post adoption implementation and consequently aid in empirical generalization.

### **1.5.2 Practical Contribution**

This study illustrates the effects of the organizational and technological factors on ERP intermediate and overall benefits in Malaysia. Such relationship should be of interest to the business community because it will provide a basis for top management to design an effective strategy for dealing with the unique needs of the extremely different plants or subunits as discussed earlier which can be essential for a firm to improve its performance and gains the desired competitive advantages. For instance, if the findings indicate that IS Sophistication has a significant impact on the intermediate benefits, then top management can focus on the most important factors of IS Sophistication that will improve the firm daily operations. In addition, if the findings show that Differentiation is being moderated by the Customization, suggestions can be made to the firm to improve the level of coordination and integration internally with the other proprietary systems and also the external system integration with their customers and suppliers.

## **1.6 Organization of the study**

The main part of the dissertation is divided into five Chapters, which will be briefly introduced:

### *Chapter1: Introduction*

The introduction section provides a brief overview of the study. It presents research background, motivation of the study, research problems, objectives of the study, scope of the study, and contributions of the study.

### *Chapter 2: Literature Review*

In this section, selected academic literature related to ERP and its related measurement approaches. Contemporary models and theoretical framework will be discussed.

### *Chapter 3: Methodology*

The methodology section critically examines a range of research approaches and techniques. Strengths and limitations will be investigated in order to select the strategy most appropriate for this research.

### *Chapter 4: Analysis and Results*

In the analytical section, it presents the methodology of the study, which includes the development of proposition, research design, sampling design, data collection procedure and followed by data analysis techniques used in this study.

#### *Chapter5: Discussion*

In the discussion section, further interpretation and explanation of findings is provided and comparison is made between the findings with other literature in the area of the study.

#### *Chapter 6: Conclusions, Limitations and Recommendations*

In this chapter, the findings are summarized; limitations of this research are highlighted and recommendations for future research and the practicing manager are made.