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Keywords

Grounded, Study, ERP, Adoption, Vendor, Selection, Thailand

Disciplines

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A Grounded Study of ERP Adoption and Vendor Selection in Thailand

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Abstract

This paper contributes to the literature of the adoption of ERP systems and other existing and new IT-based innovation in developing countries. There is an imperative for a framework to explain the decision-making processes in ERP system adoption and vendor selection in general but particularly in developing Asian countries where knowledge on ERP systems is limited. The authors conducted interviews with IT managers and end-users to identify factors affecting ERP system adoption and ERP system vendor selection by Thai-owned and multinational companies (MNCs) in Thailand. The findings from the study have led to the development of a research model of ERP system adoption. The paper presents a description and discussion of the model and identifies areas for its implementation and future research.

Keywords

Enterprise Resource Planning, ERP, Innovation adoption, Developing country, Thailand, Grounded theory

INTRODUCTION

Enterprise Resource Planning (ERP) systems first received attention in the early 1990s, and became popular in organisations worldwide by the late 1990s. Bingi et al (1999) estimate that the global market for ERP systems is expected to have long-term growth rate of 36% to 40%. They are thus enterprise systems whose attributes and success factors are of current interest to both researchers and practitioners.

As defined by Davenport (1998, p.121), an ERP system is as an enterprise system that promises seamless integration of all information flowing through a company, including financial and accounting information, human resource information, supply chain information, customer information. An ERP system is considered to be a highly complex technology. Installing it requires large investments of money, time, and expertise, and involves the coordination of requirements across multi-adopters at different organisational levels. Consequently, there is an imperative for a framework to explain the decision-making processes in ERP system adoption and vendor selection. It is, however, surprising that the ERP system adoption and selection phases have received minimal attention (Verville & Haltingen, 2002). Published research on the topic of ERP mainly focuses on issues related to the implementation phase of the ERP system lifecycle (Esteves & Pastor, 2001; Al-Mashari, 2002).

As with Information Systems in general, most published research conducted on ERP systems has been undertaken in developed Western countries whose environments are similar to those where the systems were created. There is limited knowledge on ERP system adoption in developing Asian countries, particularly in Thailand. It is also probably that there may be inherent difference in ERP adoption strategies and processes between locally-owned and multinational companies. Different structures and operation processes may require different ERP systems and different methods of implementation. Hence, this study of ERP system adoption and ERP system vendor selection by companies in Thailand has some significance.

This paper contributes to the literature of the adoption of ERP systems and other existing and new IT-based innovation in developing countries. It reports the development of a research model of ERP system adoption. The authors conducted interviews with IT managers and end-users to identify factors affecting ERP system adoption and ERP system vendor selection by Thai-owned and multinational companies (MNCs) in Thailand. The next section describes the research methodology, and this is followed by the findings from the study leading to the establishment of a method. The paper concludes with a discussion of the implementations of the model and identifies areas for the future research.

METHODOLOGY

The majority of prior studies in this area used well-established research models, such as the Technological Acceptance Model (TAM) (Davis, 1986, 1989), to predict whether individual will adopt information technology (IT). However, the purpose of this study was not to test hypotheses or forced the data to fit a pre-existing framework. The authors wanted to understand behavioural intentions of the interviewees, and so choose a

research method which would allow for the emergence of whatever concerns and issues that IT managers and end users considered significant. Grounded theory was thus deemed the most appropriate method to apply to the study. It allowed deep context categories and a theory of facts to emerge from collected data. To be specific, this allowed the IT managers and end-users to explain the most important reasons for adopting their ERP system and ERP system vendor in their own words.

Sixteen companies that had already implemented an ERP system were selected and included in the study: eight Thai-owned companies and eight MNCs. The MNCs were randomly selected from lists supplied from foreign Chambers of Commerce in Thailand. The Thai-owned companies were drawn from the database of the Revenue Department of Thailand as having the largest turnover of all companies in Thailand. All IT managers were contacted by telephone, in order to determine their willingness to participate. In each case, at least one IT manager and one end-user participated in the interviews. The authors allowed each IT manager to decide which end-user would be interviewed next. The interviews were conducted at each company during normal working hours, taking place either at the participant's office or in their conference room.

All the qualitative data collected through the interviews were analysed by using grounded theory techniques. As defined by Glaser (1992, p.16), grounded theory is "a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area". Thus, a grounded theory method provides a practical guide to systematically manage and analyse data. Undertaking the constant comparative method of analysis and coding procedures in grounded theory, the authors can reduce the quantity of data, "transcend the empirical nature of the data", and obtain "a condensed, abstract view scope of the data" (Glaser, 1978, p.55). This was the process followed here.

DATA ANALYSIS

It is important to note that data collection and data analysis were undertaken simultaneously and progressively. The authors started the initial data analysis immediately after the completion of each interview (within 24 hours). Each episode of data analysis could then suggest further data collection. Moreover, alternating data collection with analysis could validate "concepts and hypotheses as these are being developed" (Strauss & Corbin, 1998, p.46). Following the analysis of transcripts from the first and previous interviews, the authors revised the interview guide, and added a few new questions for the subsequent interviews as patterns and themes emerged. Interviewing and data analysis was completed when there was no little data emerging, and the relationships among the categories were stable.

The authors started by performing a line-by-line analysis of the interview transcripts underlining significant words or sentences that contain particular thoughts, ideas, attitudes, feelings or experiences of interviewees in adopting and using an ERP system. The authors then compared the incidents within the data for similarities and differences, then grouped and labelled them in order to classify the phenomena in the data. Through constant comparative analysis, the authors explained what was happening in the data, and looked for relationships or configurations among emerging categories.

This analysis led to the uncovering of a set of themes embedded in the data, one of which involved an understanding of what IT managers and end-users imagined about using an ERP system in their own environments prior to physical implementation. The intention was to empathise with their real or latent needs from, and positive or negative expectations of, an ERP system, rather than just focusing on the attractive features of an ERP system. It was believed that images, which are embedded in adopters' attitudes, might relate to adoption decision, implementation and usage behaviour of an ERP system.

The authors explored the perceptions of both IT managers who are most responsible for an ERP system and of end-users from a broad range of industries and organizations using ERP systems from several vendors. It is worth highlighting that an image often came from the answers of interviewees, and from observations made during the interview, because as James (1996) argues, an image relates to the emotions associated with an ERP system.

FINDINGS

Reasons for ERP System Adoption in Thai-owned Companies

Most Thai-owned companies were aware of the general tangible and intangible business benefits of ERP systems. Nevertheless, they had mainly turned to an ERP system in order to replace their disparate legacy systems, for three reasons.

One Integrated System

In addition to resolving Y2K compliance, all Thai-owned companies in the study have a strong expectation that new IT will provide an integrated software solution for improving the performance of their internal business processes. An ERP system incorporates multi-application modules designed to integrate all majors departments and functions across a company. An ERP system was expected to tie all disparate enterprise systems together, or to integrate itself with existing systems, and therefore to make them communicate directly to each other.

Unwanted Legacy Systems

One of the primary driving forces for ERP system installation was a replacement need. The legacy systems, most of which were developed internally, of the ERP-adopting companies constrained their abilities to execute their businesses. Many IT managers agreed that the growing size of their companies made it difficult to manage information manually or even by their old systems. An ERP system was expected to deal more efficiently and effectively with the following issues: 1) handling large amounts of data for all routine core business transactions, 2) solving the problem of information fragmentation, 3) eliminating redundancy and inconsistency in non value-added works, and 4) improving work flow.

Business Practices

The majority of the ERP-adopting Thai-owned companies needed to bring the 'best business practices', or 'reference models' to their organisations. The companies that had the need for best practices realized that practices from other successful companies in the world, or even their competitors, embedded in ERP systems might help them to standardise their business processes and link them with the world's best. In particular, non-value adding functions and useless tasks in their companies could be reduced.

ERP System Vendor Selection in Thai-owned Companies

Nearly all Thai-owned companies in the study believed that an ERP system was unlike other commercial-off-the-shelf solutions, and needed a quite distinctive consideration. They, thus, set evaluation teams to evaluate their available options and thereby to reduce ERP system selection risk. On the other hand, a few other companies relied only on their owner's decisions. On the other hand, a few other companies relied only on their owner's decisions. In these cases an owner or only a few top executives, who have ultimate power, were directly involved in the ERP system adoption. Not only an ERP system vendor but also many other products were selected in preference to them. Thanasankit and Corbitt (2000, p.8) explain that Thai decision-making is commonly not a team approach as in western countries, but is usually confined to high level management. Subordinates in Thai organisations accept that their superiors make decision in an authoritation way (Holmes & Tangtongtavy, 1995).

It is important to note that all Thai-owned companies in the study were among the largest companies in Thailand. The senior executives of these companies saw IT as a tool to maintain and improve competitive advantage. They believed that it was worthwhile investing in IT. Nevertheless, the reputation of the ERP package and the 'best-fit' with current business procedures were still the most important factors that they considered.

The Reputation of the Vendor

An ERP system from a popular vendor such as SAP was considered to be vastly preferable to an unknown. Such a well-known ERP system was selected because companies had great confidence in its experience and history evidenced by its consistently held top market share in the world and in Thailand. In addition, some companies felt pressure to keep up with their competitors, and were motived to adopt an ERP system and seek the same vendor so that they would not lose their relative competitive position.

Best Functionality and Technical Fit

Many companies took great pains to consider their options, and seek the right package to ensure the best fit to their business requirements. Specialised businesses turned to smaller systems that were less customised and could be flexible enough to suit their specific, unique requirements. The interviewees from those companies

(such as mining and agriculture) explained that they needed a good functional fit at a reasonable price, and therefore did not want to compromise their core business functions.

A Summary of ERP System Adoption Issues in Thai-owned Companies

Figure 1 shows a diagrammatic summary of the reasons for adopting an ERP system and selecting an ERP system vendor.

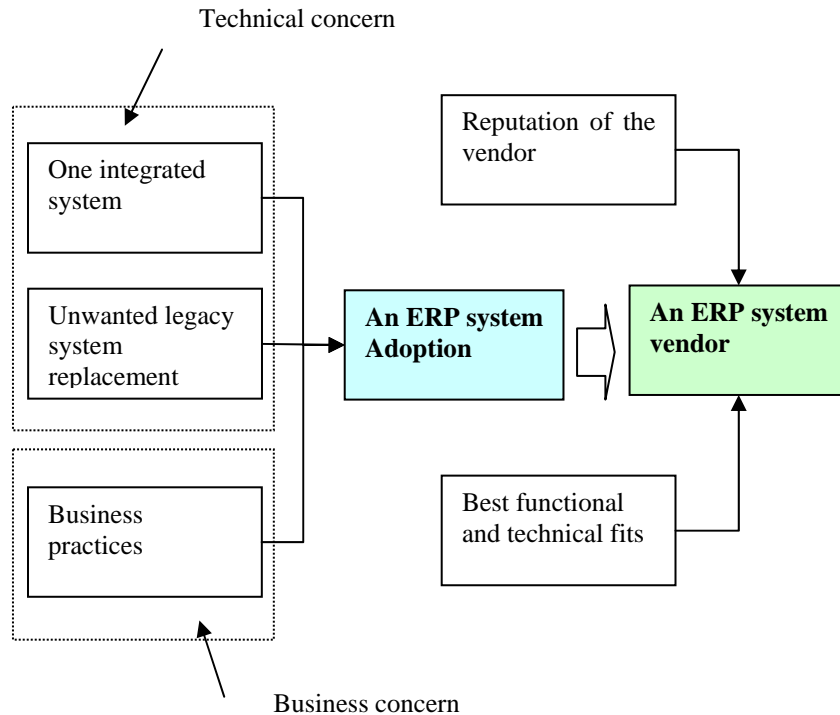


Figure 1. The Reasons of Thai-owned Companies for Adopting an ERP System and Selecting an ERP System Vendor

The model of Figure 1 depicts the reasons that Thai-owned companies have for adopting an ERP system fall into two categories, namely technical concerns and business concerns. Issues of having one integrated system and replacing unwanted legacy system can be regarded as technical concerns, while the other reason, business practices, constitutes a business concern. The decision to adopt an ERP system then leads to the problem of choice of vendor, which is made on grounds of vendor reputation together with appropriate functionality and fit to the needs of the organization.

Reasons for ERP system Adoption in Multinational Companies (MNCs)

Interviewees reported that their companies sought to implement an ERP system, for three main reasons.

Central Control

Most ERP-adopting MNCs in the qualitative study had centralized structures. It was critical for them to oversee and manage their operations around the world. There was a need for a system that would enable them to solve integrated data problems, so that their headquarters could obtain company-wide control, and monitor their operations on a daily basis. An ERP system was expected to increase visibility and transparency into all aspects of business operations and value-chains, so that their senior executives could be able to drill down data at any level and to keep track of operations at anytime and anywhere. At the same time, an ERP system could provide better information for better decision-making, and improve business-intelligence capabilities.

Top-down Focused Financial Strategy

Most ERP-adopting MNCs in the study followed a top-down focused financial strategy. An IT manager stated that his company wanted to upgrade their existing accounting and finance software to an ERP system, initially in order to improve report processing. The objective was to reduce time and resources to generate consolidated global reports, especially accounting and financial reports, which an accounting department had often taken several hours or weeks each month to accomplish without the ERP system. As an ERP end-user pointed out, executives in his company can now automatically receive monthly corporate reports from his branch and other branches on time, allowing headquarters to compare and reconcile financial accounting data between subsidiaries. It was considered important to produce monthly financial statements, and make them available and accessible to stakeholders around the world on a timely basis. In other words, an ERP system was expected to improve accessibility of information. A second user explained that their ERP system would enable stakeholders of his company to have access to information anytime and anywhere.

Real-time Sharing of Data

With a centralised repository, an ERP system could provide the real-time sharing of data to employees in remote locations. An IT manager, for example, commented that employees in his company can have real-time access to the ERP system from any desktop and/or notebook, because when new information is entered in one place, related information is automatically and instantly updated. Another IT manager stated that an ERP system is able to solve the problem of consolidating and batch processing. ERP end-users can spend more time analysing data, and less time compiling data. Managers can make better, faster strategic and operating decisions using real-time data.

ERP System Vendor Selection in Multinational Companies (MNCs)

The findings of the study also revealed that the MNCs also selected their ERP system vendor because of the central control strategy. The headquarters exercised intense control over the internal business processes of their subsidiaries. The subsidiaries had to purchase a specific brand of hardware and software. The headquarters seldom required their subsidiaries to make decisions regarding hardware and software, or allowed them to make suggestions, because the headquarters were concerned with compatibility and consistency. Nearly all multinationals implemented an ERP system because they considered it to be a solution for the integration and automation of business processes. They stated that the real value of an ERP system was that data and information exchange could be done consistently. To avoid potential system integration problems, headquarters had to simplify and standardise their hardware and software early, so that they could manage their entire business processes with one integrated software package.

A Summary of ERP System Adoption Issues in Multinational Companies (MNCs)

Figure 2 shows a diagrammatic summary of the reasons for adopting an ERP system and selecting an ERP system vendor.

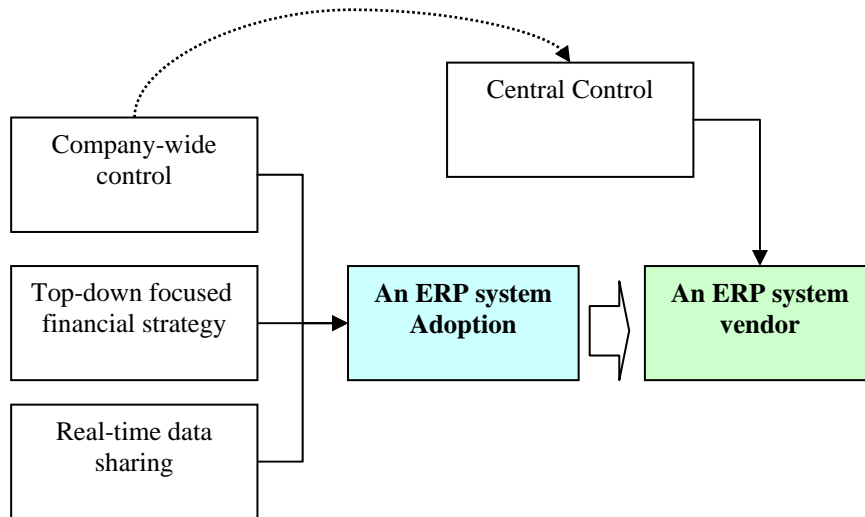


Figure 2. The Reasons of MNCs for Adopting an ERP System and Selecting an ERP System Vendor

The model depicted in Figure 2 for ERP system adoption in MNCs reflects the finding that a desire for company-wide control dominates the reasons for adopting an ERP system and then selecting an ERP system vendor.

CONCLUSION AND FUTURE RESEARCH

Thai-owned companies choose to adopt an ERP system mainly because of the utility of the ERP system. They expect that an ERP system can solve their business problems and meet IT needs, in order to achieve world-class performance. Furthermore, they select their ERP system vendors, based on their judgment of the product suitability for use in their organizations. They also use the reputation of the vendor to guide their choice. This is a model that reflects genuine organisational needs and the belief that an ERP system is an essential tool for a company to be successful in the competitive market place.

In contrast, the findings of the study imply that MNCs are primarily seeking to use an ERP system to develop company-wide common systems, and maintain company-wide IT standards among their subsidiaries. They want to streamline global communications, enhance coordination, and improve information sharing and reporting. Thus, headquarters standardise and/or centralise their IT systems. By implementing an ERP system, they believe that they can have all data on their subsidiaries available to all managers and integrate all organisational information. What is important for them is that an ERP system provides a central repository, and simplifies how users access and analyse data. As such, headquarters can gain control over local operations.

In addition, MNCs expect that implementing an ERP system will lower the overall costs of IT as it will reduce the number of duplicated business or functional processes and the range of IT systems to support. Many of the same processes and activities can be managed globally or regionally, not locally, and data can be processed at headquarters or regional operational centres. The cost of maintaining interfaces between disparate systems across locations can be lowered. Unlike the locally-owned companies, MNCs do not directly relate ERP systems with improved business processes or achieving worlds best practice. It is instructive to observe the disparity of the models of the two groups of companies.

From a practical standpoint, the findings of this study can help ERP system vendors to understand the different process of ERP system adoption and ERP system vendor selection between the two groups of companies. Locally-owned companies want a reputable product that fits with the needs of the company while MNCs are more interested in standardisation across the company so that local managers will have little say in the choice of

vendor. Vendors can also use the findings to improve the quality of their ERP systems, services and processes that will satisfy their customers in developing countries.

This study was inductive in nature. The findings of the qualitative study allow the generation of a number of theories that emerges from the experiences of participants in the substantive area of research, but are not generalisable. It is suggested that future research could be undertaken to empirically test the research models of images of ERP systems, the reasons for adopting and not adopting an ERP system, and selecting an ERP system vendor, using either quantitative or qualitative data or both.

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