Examining the ERP Implementation Process from a Failure Case

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Abstract

This study illustrates the implementation process of a failed Enterprise Resource Planning System (ERP) implementation case study in a multinational company. It examines the current literature concerning ERP implementation processes and related ERP implementation problems within various implementation phases. A case study research method is used to study the implementation process and examine the factors affecting implementation failure. The study highlights that the successful implementation of an ERP system requires a consideration of various failure factors.

Keywords: ERP, Failure Case, Implementation, Critical Failure Factors

1. Introduction

An ERP system is an integrated software solution, typically offered by a vendor as a package, providing the seamless integration of all the information flowing through a company such as financial, accounting, human resources, supply chain, and customer information (Davenport 1998). ERP implementation is a lengthy and complex process, and there have been many cases of unsuccessful implementations (Parr et al. 1999), which have had major impacts on business performance. Many companies have implemented ERP to improve competitive advantage and business processes, however, it has been estimated that at least half of ERP implementations fail to meet expectations (Al-Mashari 2000).

As ERP plays a very important role in business, ERP implementation and its critical issues, critical success factors and implementation problems have been investigated for many years (Majed et al. 2003, Parr et al. 1999, Soh et al. 2000 and Sumner 2000). Different ERP implementation phases are associated with different kinds of ERP implementation problems (Markus et al. 2000). A great deal of this research has focused on the implementation of ERP after the selection of ERP software.

The ERP implementation literature has provided a solid theoretical background to ERP research. However, there seems to be insufficient research investigating the failure factors of ERP implementation, which when explored, could provide useful information for practitioners and a research framework for understanding how failure factors influence ERP implementation. This will be discussed in more detail within the background of the literature review section.

To summarize, our aims at achieving the following objectives:

1. To examine the process of ERP implementation based on “ERP System Life Cycle” (Markus et al. 2000)
2. To identify the factors causing ERP implementation failure
This paper is organized into three sections. Firstly, a review of current literature on ERP implementation is presented, and gaps are identified in the literature investigating failure factors on ERP implementation. Secondly, a detailed examination of ERP implementation problems based on the failure case study is presented. Thirdly, this study provides some resulting managerial implications. It is expected that this study will provide knowledge for bridging the gap within research into ERP critical failure factors.

2. Background and Literature Review
There have been many studies of unsuccessful ERP implementations within business, including accounts of the inability of Hershey to ship candy during Halloween, Nike losing shoe orders, and Foxmeyer’s problems with processing orders (Cottelee 2002).

As failure factors are not necessarily equal to the opposite of success factors, it will be helpful to investigate the failure factors based on real examples of ERP failure. It is appropriate to examine the causes of failure by investigating the ERP implementation process based on the “ERP System Life Cycle” (Markus et al, 2000). We will then be able to examine the implementation problems and their causal effect relationship from phase 1 to 4, and make conclusions about ERP failure factors.

2.1 Degree of Impact of ERP Failure Factors
Practitioners tend to discuss the impact of the failure in ERP implementation in a relative sense, referring to the shutting down of the system, being able to use only part of the ERP system, suffering business loss, dropping market price, losing market share and competitive advantages due to implementation failure and so on (Deutsch 1998, Diederich 1998, Nelson et al. 1999). However, a review of the literature has shown that the notion of ERP failure has been poorly articulated. Previous research has focused on IS implementation for the definition of IS failure (Lyytinen 1988). The majority of studies have failed to take into account the richness of the ERP failure phenomenon. In this study, we would like to conduct empirical investigations into ERP failure from the perspective of management, the project team, and the consultants involved in implementation.

3. Research Methodology
The business enterprise chosen is a company that experienced an ERP failure, when it attempted to implement first tier ERP software. This company as a whole was willing to collaborate on this research project, share experiences, and discuss the reasons for failure.

Based on a case study methodology (Yin 2003), a research protocol was established drawing on a literature framework. The protocol was critically evaluated and reviewed by industrial practitioners to make sure the protocol design helps to answer the research question. All interviews results were taped, transcribed and reviewed by another research assistant. The resulting interview transcription was reviewed by the interviewees to confirm the internal reliability of the research study.

Top Management, the IT Manager, Logistics Manager, Production and Logistics Supervisor, Senior Logistics Manager and external ERP consultant were interviewed. Data triangulation was conducted to increase the internal reliability of the study. A review of ERP System implementation documents, email communication, and meeting minutes was conducted for data triangulation. As different interviewees evaluated the systems based on different perspectives, objective judgment was provided and this was reviewed and confirmed by the chief informant of the company.
4. Research Framework
Based on the work of Markus et al (2000) a research framework explaining the ERP System Life Cycle, and implementation problems encountered in the four phases was identified. Details of different phases will be elaborated in the case study.

5. Case Background Introduction
The company used in the case study is a multi-national electronics components manufacturing company, is listed in fortune 500, conducts business mainly in the Asia Pacific region, and has an ERP system (ranked as first tier) already implemented. Our focus will be on the company’s Hong Kong branch office, where the sales turnover rate is more than 400 million US dollars. The top management of the company had reserved 1.3 million US dollars for ERP implementation, taking into account hardware, software license, networking and consultancy service charges. They recruited ERP consultants (from one of the big four accounting and consulting firms of the India and Hong Kong branch office) who implemented ERP software for the corporate India branch office.

The project manager of the Indian office and top management of the Hong Kong office judged that India’s business requirement is be similar to that of the Hong Kong branch office. The Hong Kong project manager was newly recruited for this ERP implementation, although he did not have any experience with ERP implementation specifically. Indeed, the users, the management, and the Hong Kong ERP consultant, found that he had insufficient business knowledge of the Hong Kong branch office.

6. Reasons for Failure:
In this study we are concerned with the assessment of failure at four different phases during the adopting organization’s experience with an ERP system.

6.1 Chartering Phase:
This phase is concerned with project planning, budget formulation and design of IT infrastructure prior to the ERP implementation.

6.1.1. Unrealistic Expectation
Top management thought that ERP was like a “dream” that would make all wishes come true, including business process automation and the automatic acquisition of competitive advantage. Thus, top management tended to focus on the advantages of implementing an ERP system without considering the complexity of the ERP system and the difficulties of implementation.

This unrealistic expectation was also widespread amongst middle management and operational level staff within the organization (including project manager and project team members). They did not realize the potential risk of ERP implementation, or the necessity for conducting business process reengineering to handle the complexity of an ERP system.

6.1.2 Unfeasible Budget Design
As they had less than 1.3 million US dollars for the whole ERP adoption budget, top management finally realized that resources may not be sufficient. The ERP consultant and the company’s project manager advised the company to spend less money on the acquisition of hardware (server), so as to reduce the budget. The IT manager rejected this suggestion, as server performance is crucial for performing daily business operations. Indeed, server
performance was extremely poor and the users complained about the slow response time of the ERP system.

Top management, the project manager and the consultant agreed to set the implementation schedule to six months. Finally, it was found that six months was an insufficient amount of time for implementing the ERP systems.

6.2 Project Phase:
This phase is concerned ERP system implementation, including system configuration, conducting BPR and providing training to the project team members and end users.

6.2.1 Poor Communication between Consultants and Internal Staff
The consultants could speak fluent English (with a strong Indian accent), but the middle and operational staff of the organization found it difficult to understand their accent. Thus, they could not fully understand the ERP concepts, functionality, and the use of the ERP system for daily operations. The project manager realized the poor communication problem, but he did not control the situation. Finally the staff members were able understand the consultant’s accent at the cost of wasting two months of the implementation period.

6.2.2 Failure to Redesign Business Process
The consultants did not demonstrate professional skill in conducting Business Processes Reengineering (BPR). They did not try to understand their current business process or identify the gap between business process and ERP system functionalities. They simply copied the configuration from the India branch office without conducting a sufficiently detailed investigation or verification of the suitability of configuration copying.

They suggested workarounds to minimize the needs of business process redesign. However, the resulting informal business process was inappropriate, and fundamental changes to business process were required. Users did not realize that their informal business process would have such a great impact on the other parts of the integrated ERP system.

6.2.3 Lack of Business Analyst
Both internal and external ERP expertise within the organization was lacking. Consultants did not map the system functionalities with the business requirements. None of the staff members had any business analyst experience with ERP implementation, and the results of business requirement mapping were found to be very poor.

6.2.4 Incorrect System Configuration
As the ERP system was a new release version, consultants were not familiar with the new functions, they did not know how to configure the system, and ERP training was not professionally delivered. Project team members found that the system configuration was incorrect, and they needed to rely on another team of consultants to fix the problems.

6.2.5 Insufficient Training and Reskilling of the IT Workforce
Middle and operational level staff members were overloaded with work as no extra human resources were allocated to lighten their full-time job burden. They attended training during the daytime, but they were required to complete their tasks in the evening. Some of them even worked overnight to complete their ERP project and business operations. Top management did not allocate extra human resource to cope with this increased load.
6.2.6 Insufficient Testing
Top management had conducted a meeting with all the project team members and had discussed the issues of our non-readiness for ERP system to “go live”. They understood that their insufficiencies (in both training and testing) might cause problems with ERP implementation. However, they finally agreed to “go live”, even though they were not ready. The project team agreed to devote their time and effort to solve problems and believed that they could solve all the problems gradually after the system was implemented.

6.3 Shakedown Phase
This phase involves stabilizing, eliminating “bugs” and settling normal operations.

6.3.1 Problem with System Bugs
The Senior Logistics Manager found that the vendor’s new release version of ERP system was full of bugs because the vendor did not conduct sufficient testing before introduction. He complained that the Consultants were not familiar with the new demand forecast function. He finally realized that he paid a high cost for this incorrectly installed function, which misled his management decisions and logistics planning.

6.3.2 Excessive Stress and High Turnover of IT Personnel
IT personnel were under high stress and worked overnight to solve all the ERP implementation problems. Two staff members determined to resign from their current position, so the IT manager needed to manage most of the IT problems.

6.3.3 Receiving Complaints from Customers and Suppliers
Due to poor knowledge and insufficient skills in using the ERP System, the product master file was incorrectly entered. The product unit and sales price were inaccurately shown on the sales invoices. Thousand of Hong Kong dollars were erroneously written as million of dollars.

6.3.4 Absence of Sharp and Fast Improvement
Consultants left the company a month after the system “go live” date, even though they knew that the system was unreliable. ERP project team members tried to solve the problem using a trial-and-error approach. This resulted in an absence of sharp and fast improvement during the shakedown phase.

6.4 Onward and Upward Phase
Maintaining systems, supporting users, getting results, upgrading and systems extensions.

6.4.1 Failure to Retain Trained IT Staff
Some of the staff (in accounting and IT), after receiving ERP training, left the company due to high stress and work-overload. The headquarters of the organization realized that the Hong Kong branch office was suffering from an oversized inventory and thus tremendous inventory costs were incurred. Finally two new staff members, a senior IT manager and logistics manager, were recruited to solve all the problems in the Hong Kong office. Experience in ERP implementation was a prerequisite for these positions.

Top management of the Hong Kong office hired another team of ERP consultants to re-configure the system and provide training services to the Hong Kong branch office. After eight months of confusion, the ERP System became more stable and could provide support to
the business operations. The IT manager continued to report system bugs (including the poor quality of the demand forecast function) to the ERP vendor, and it took a year to fix them.

7. Identification of Failure Factors
During case interviews, each of the interviewees was asked to suggest critical failure factors causing the ERP implementation failure. After conducting data triangulation and building a chain of evidence, the factors acquired from different interviewees were verified and evaluated. The most commonly agreed and highly prioritized failure factors are:

1. Poor communication among consultants and project team members
2. Poor consultant quality (insufficient product expertise, poor communication skill, poor professional advice on conducting business process re-engineering)
3. Insufficient organizational readiness for ERP implementation (data quality, business process re-design, sufficient testing of the systems)
4. Unrealistic expectations from top management concerning ERP System
5. Unclear concept of the nature and use of ERP system from the users’ perspective
6. Poor project management capability related ERP system implementation

8. Discussion
The study of the ERP implementation process and examination of failure factors helped to reveal that ERP consultant effectiveness plays an important role in determining the failure of ERP implementation. Considering the importance of mapping software to requirements, consultant effectiveness will be one of the key factors influencing ERP implementation.

ERP implementation is different from traditional information systems projects, as the ERP system is an integrated package of software that requires professional expertise in providing configuration, training and business process engineering services (Markus et al 2000). Due to lack of technical and process knowledge, businesses may be dependent on the service offered by the consultant. However, there is an existing gap in prior research, which tends to overlook the importance of consultant effectiveness.

Sumner has conducted case studies with ERP project managers, and found that a lack of business analysts with sufficient business and technology knowledge, and a failure to mix internal and external expertise effectively are risk factors unique to ERP projects. It was suggested that the strategies for controlling risk factors in ERP projects include the effective use of external consultants on project teams (Sumner, 2000). However, only limited research has been conducted on the management and evaluation of external consultants working on ERP projects.

Based on this study, we were able to identify that successful ERP implementation requires effective communication between consultants, project team members and operational staff. If consultants provide workarounds without suggesting the needs of conducting business process reengineering during implementation process, the chance of ERP implementation being successful is reduced. Consultant should also be facilitators of business process change. If they do not provide professional advice, guidance and support, then the implementation is threatened. The project manager should take action to resolve this problem, otherwise, the ERP implementation may ultimately fail.

Prior research has focused on investigating success cases, but this is inappropriate for revealing the factors affecting implementation failures. With this single case study, we can identify some critical factors causing the ERP implementation failure. However, consultant
effectiveness should receive more attention in future research projects, as it is an important risk factor affecting the success of ERP implementation.

9. Conclusion
This research study attempts to bridge the literature gap within ERP research by examining the process of ERP failure and making conclusions about the failure factors that contribute to ERP implementation failure. Based on an “ERP System Life Cycle”, it was possible to identify distinct problems associated with different implementation phases. This study also examines the critical role performed by the project team, including project manager, project team members, external consultant, operational users and top management. Their respective contributions to the failure of ERP implementation are examined and discussed. Future research is recommended, especially the use of multiple case studies, and the introduction of an organizational size factor. It is hoped that more research will be conducted in the future to open the black box of ERP implementation failure and enable both practitioners and academic researchers to discover the best ways to increase the success rate of ERP implementation.

10. Reference