

## Chapter 4.28

# Assessing Critical Success Factors of ERP Implementation

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### INTRODUCTION

An enterprise resource planning (ERP) system is an integrated set of programs that provides support for core organizational activities. ERP is a software infrastructure embedded with “best practices,” or best ways to do business based on common business practices or academic theory. The aim is to improve the cooperation and interaction between all the organizations’ departments, such as the products planning, manufacturing, purchasing, marketing and customer service department. ERP systems is a fine expression of the inseparability of IT and business. As an enabling key technology as well as an effective managerial tool, ERP systems allow companies to integrate at all levels and utilize important ERP

systems applications, such as supply-chain management, financial and accounting applications, human resource management and customer relationship management (Boubekri, 2001). ERP systems hold the promise of improving processes and decreasing costs. Furthermore, two important new frontiers for ERP systems are electronic business (e-business) and supply-chain management (Wang and Nah, 2001). The systems can connect with suppliers, distributors, and customers, facilitating the flow, the product and information.

ERP systems implementation is costly and complex. In many cases, an ERP system is the largest single investment in any corporate-wide project. The software is expensive, and the consulting costs even more. Meta Group found that the average ERP systems implementation takes 23 months with total owners’ cost of \$12 million (Stewart, 2000). The

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ERP systems implementation is the process where business process and ERP system match each other. Usually the firm has to change the business process per ERP systems. Sometimes most positions have to be redesigned according to the ERP systems. Thus the difficulties and high failure rate in implementing ERP systems have been widely cited in the literature (Davenport, 1998; Kim, Lee, & Gosain, 2005)). The failure percentage of ERP systems was determined by one study as ranging from 40 to 60% and from another study as between 60 and 90% (Langernwalter, 2000; Ptak and Schragenheim, 2000; Yingjie, 2005).

Although the failure rates of these ERP implementations have been highly publicized, this has not distracted companies from investing large sums of money on ERP systems (Somers & Nelson, 2004). ERP systems provide companies with the means of integrating their business functions into a unified and integrated business process. As companies implement more enterprise based systems throughout their organizations, the need for integration of these systems becomes even more paramount. Expanding from the functional areas of accounting, human resources, and shop floor control to an enterprise-wide system has become a format for producing full organization integration.

Over the past few years, limited research has been conducted about ERP implementation issues: mainly case studies in individual organizations have been reported. That is a motivation toward conducting empirical studies to explore critical factors that affect ERP systems implementation.

This study presents the results of an empirical study that surveyed managers from seven corporations, who were identified as having a key role in ERP systems implementation, in order to assess empirically which CSFs are critical in leading a successful implementation of ERP systems. A factor analysis solution was used to derive factors affecting successful ERP implementation. These factors are: ERP implementation management, users aptitudes and communication and technical

knowledge. The study reveals that about 81.5% of the variances in ERP systems implementation were explained by the critical factors identified in the study.

The remainder of this article is organized in four sections. First ERP-related literature is reviewed. The next section introduces the research methodology, followed by the presentation of the results. The paper ends with the conclusions and implications for future research and practice.

## **BACKGROUND**

Implementing an ERP system is not an easy task (Tsai et al., 2005). It can cause dramatic changes that need to be carefully administered if the potential advantages of an ERP systems solution (Al-Mudimigh, Zairi, & Al-Mashari, 2001) are to be gained. In some well-documented cases, spectacular results have been achieved (Johnston, 2002). There is on the other hand a relatively high failure rate: it was reported that three-quarters of ERP systems projects were judged to be unsuccessful by the ERP systems implementing firms (Kyung & Young, 2002). What is more, failures are much less extensively documented. As a result, pitfalls to be avoided tend to be less well known.

A recent summary of ERP systems literature states that research of critical success factors (CSFs) in ERP systems implementation is rare and fragmented (Nah, Lau, & Kuang, 2001). Identifying CSFs relevant to local companies is one way to increase the chances of a successful local implementation (Sum, Ang & Yeo, 1997). The idea of identifying CSFs as a basis for determining the information needs of managers was popularized by Rockart (1979). CSFs are those factors that are critical to the success of any organization, in the sense that, if objectives associated with the factors are not achieved, the organization will fail—perhaps catastrophically (Rockart, 1979). In the context of ERP systems project implementation, CSFs represent the es-

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