Chapter 4.9
Enterprise Resource Planning (ERP) Implementations: Theory and Practice

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ABSTRACT

Enterprise resource planning (ERP) systems have been widely implemented by numerous firms throughout the industrial world. While success stories of ERP implementation abound due to its potential in resolving the problem of fragmented information, a substantial number of these implementations fail to meet the goals of the organization. Some are abandoned altogether and others contribute to the failure of an organization. This article seeks to identify the critical factors of ERP implementation and uses statistical analysis to further delineate the patterns of adoption of the various concepts. A cross-sectional mail survey was mailed to business executives who have experience in the implementation of ERP systems. The results of this study provide empirical evidence that the theoretical constructs of ERP implementation are followed at varying levels. It offers some fresh insights into the current practice of ERP implementation. In addition, this study fills the need for ERP implementation constructs that can be utilized for further study of this important topic.

INTRODUCTION

Enterprise resource planning (ERP) systems are widely implemented as the backbone of many manufacturing and service firms. They are designed to address the problem of information fragmentation or "islands of information" in business organizations (Muscatello, Small, & Chen, 2003). A typical ERP system integrates all of a company's functions by allowing the modules to share and transfer information freely (Hicks & Stecke, 1995; Chen, 2001). In addition, all information is centralized in a single relational database accessible by all modules, eliminating the need for multiple entries of the same data. Customers and suppliers with

network security clearance are allowed to access certain types of information by way of an external communication interface.

ERP systems offer tremendous opportunities to more consistently provide information to organizations in a standardized, centralized, and cost efficient manner (Olson, Chae, & Sheu, 2005). Many industry reports extol the virtues of ERP and its multiple benefits for those firms that can successfully implement these systems. One of the primary objectives for installing ERP is the ability to integrate business processes (Brakely, 1999; Davenport, 1998, 2000). ERP has also been found to be effective in reducing inventory costs, improving efficiency, and increasing profitability (Appleton, 1997; Brakely, 1999). In addition, ERP has been credited with reducing manufacturing lead times (Goodpasture, 1995; Davenport & Brooks, 2004). Other potential benefits of ERP include drastic declines in inventory, breakthrough reductions in working capital, abundant information about customer wants and needs, and the ability to view and manage the extended enterprise of suppliers, alliances, and customers as an integrated whole (Muscatello, Small, & Chen, 2003). Clearly, the integrated information technology of ERP software has the potential to provide manufacturing firms with extensive new competitive capabilities, especially since the real-time information can improve the speed and precision of enterprise response. Given the widespread popularity of ERP software, and the spectacular successes achieved by a few firms, an open question remains: Why has the effective deployment of ERP systems proven to be elusive for the majority of firms (Stratman & Roth, 2002)?

Implementation of an ERP does not come without significant technical and managerial challenges, huge financial investments, and a great deal of organizational change. Operational problems at Hershey Foods, Whirlpool, FoxMeyer Drugs, and more recently Hewlett Packard, have been blamed on poor implementations of ERP solutions (Becerra-Ferandez et al., 2005). ERP also has the reputation of being notoriously over-sold and under-delivered (Millman, 2004). Cliffe (1999) even reported that 65% of executives believed that ERP could be harmful to their organizations.

Researchers have attempted to identify the set of factors that are critical for ensuring success with ERP implementations. Most of these authors, however, have developed their list of critical success factors from a small number of case studies. For example, Holland and Light (1999) and Motwani, Mirchandani, Madan, and Gunasekaran (2002) offered a list of critical factors using two case studies. More recently, Kumar, Maheshwari and Kumar (2003) identified several success factors based on data collected from 20 Canadian firms. Employing a large scale survey, this article seeks to ascertain how businesses receive these concepts and, more specifically, which concepts are practiced widely and which are not. With this goal in mind, pertinent constructs of ERP implementations based on a critical review of business and managerial literature are first identified and developed in the second section. The research design, including data collection is then explained in the third section. The fourth section presents the results along with implications of the study findings. In the concluding section, the limitations of the study are highlighted along with guidelines for future research.

THEORETICAL CONSTRUCTS

This section identifies key factors of ERP implementations based on a critical review of both scholarly and managerial literature. These constructs include strategic initiatives, executive commitment, human resources, project management, information technology, business process, training, project support and communications, and software selection and support. The constructs developed by the authors are very similar to the ones developed by Stratman and Roth (2002), further validating the research effort undertaken here.