



Aligning ERP implementation with competitive priorities of manufacturing firms: An exploratory study

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Abstract

Companies worldwide have made substantial investments in installing enterprise resource planning (ERP) systems. In the meantime, implementing ERP systems has proven unexpectedly difficult, and the final benefits have been uncertain. Several researchers have concluded that the failures are usually the result of business problems instead of technical difficulties. ERP systems affect a firm's strategy, organization, and culture. Past research has recognized the need for planning an ERP implementation at the strategic level but offers no specific guidelines. Using the case study method that involves direct observation and systematic interviews at five US and Taiwanese manufacturing firms, this study investigates the relationship between ERP implementation practices and a firm's competitive strategy. The results confirm our research proposition, that ERP implementation should be aligned with competitive strategy. Specific guidelines are suggested for making the alignment. In addition, we identified two other variables, national culture and government/corporate policies, as being critical to ERP implementation in multi-national settings. Managerial implications of the findings and future research issues are discussed.

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1. Introduction

Enterprise resource planning (ERP) is an information system that manages, through integration, all aspects of a business including production planning, purchasing, manufacturing, sales, distribution, accounting, and customer

service (Scalle and Cotteleer, 1999). It streamlines data flows throughout the entire organization and allows managers direct access to real-time operations. Through data integration, ERP eliminates counter-productive processes and cross-functional coordination problems that hinder the integration of the organization. ERP arrived at a time when process improvement and accuracy of information became critical strategic issues. The emphasis on supply chain management and the advancement of information technology created a need for enterprise-wide integration. In the past few years,

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ERP has become a “must have” system for almost every firm to improve competitiveness. Mabert et al. (2000) surveyed 479 US manufacturing firms and found that over 60% of companies have installed or plan to install a packaged ERP system.

Previous studies have focused extensively on the implementation of ERP from an information technology point of view. While the technical aspect of installing ERP systems is undoubtedly critical, the strategic aspect of ERP systems could have an even greater impact on a firm’s competitiveness. Based on this premise, this paper investigates the relationship between ERP implementation and a firm’s competitive strategy. Understanding this relationship will enable managers to be more proactive in planning for ERP implementation. The next section reviews relevant literature followed by the presentation of research questions. The research method is then discussed. The methodology involves case studies and is used to explore the relationship between competitive strategy and ERP implementation. The findings from case studies are provided, and the research propositions are reviewed and revised. Finally, managerial implications and potential research issues are presented.

2. ERP and operations strategy

2.1. ERP implementation

Substantial research in ERP has been published over the last few years. These studies have covered a wide range of research issues pertaining to ERP systems. Some of these works identified technical issues pertaining to architecture, data standards, configuration, and hardware and software integration (e.g., Jordan and Krumwiede, 1999; Markus and Tanis, 2000; Olinger, 1998). Some researchers investigated critical factors (e.g., top management support, sufficient training, proper project management, communication, etc.) to the success of ERP implementation (Bingi et al., 1999; Kumar and Hillegersberg, 2000; Griffith et al., 1999; Holland and Light, 1999; Hong and Kim, 2002; Verville and Halington, 2002; Willcocks and Sykes,

2000). Others studied tactical issues such as process and organizational adaptation, measurement of the benefits, and resistance to change (Glass, 1998; Laughlin, 1999; Motwani et al., 2002; Swan et al., 1999).

A relatively small group of researchers were more concerned with strategic and cultural issues involving the alignment of ERP implementation to products and processes (Bowersox et al., 1998; Davenport, 1998; Hammer and Stanton, 1999; Jacobs and Whybark, 2000; Soh et al., 2000). Hammer and Stanton (1999) related ERP with reengineering, since ERP provides information that flows horizontally across the business. They argued that firms should use ERP as an integrative mechanism to create a new style of management. Davenport (1998), Bowersox et al. (1998), and Jacobs and Whybark (2000) asserted that ERP was not only a software package but also “a way of doing business”. Davenport attributed many failures of ERP implementation to the lack of the alignment with business needs. There is no single “best process” to do business as ERP systems assume and, therefore, the customization of ERP systems is necessary. He further cautioned that firms could lose their source of advantage by adopting processes that are indistinguishable from competitors. He even suggested that firms should restrain from ERP investment until further study of its business implications is fully understood. Bowersox et al. (1998) also supported the need for addressing issues of operational rigidity in order to maintain existing unique value-adding practices. They called for more effort toward integration of supply chain systems using ERP systems.

Jacobs and Whybark (2000) expressed their concerns with ERP implementation. Using the furniture industry as a reference, they illustrated how ERP implementation could lead to disaster unless there were consideration for production processes and customer demand. They suggested that two factors, centralization of information and flexibility of production systems, should be simultaneously considered as firms configure their ERP systems at multiple facilities. For example, firms that have the need for highly centralized control and low flexibility could develop one single set of “best practices” to fit all facilities. In contrast,

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