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Identifying critical issues in enterprise resource planning (ERP) implementation

Ike C. Ehie [a,*], Mogens Madsen [b,1]

[a] College of Business Administration, Kansas State University, Manhattan, KS 66506-0501, USA
[b] Accenture, Global Business Solutions, P.O. Box 18499, London EC4N 4TN, UK

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Abstract

Much has been written on implementation of enterprise resource planning (ERP) systems in organizations of various sizes. The literature is replete with many cases studies of both successful and unsuccessful ERP implementations. However, there have been very few empirical studies that attempt to delineate the critical issues that drive successful implementation of ERP systems. Although the failure rates of ERP implementations have been publicized widely, this has not distracted companies from investing large sums of money on ERP systems. This study reports the results of an empirical research on the critical issues affecting successful ERP implementation. Through the study, eight factors were identified that attempts to explain 86% of the variances that impact ERP implementation. There was a strong correlation between successfully implementing ERP and six out of the eight factors identified.

Keywords: ERP implementation; Critical success factors; Systems integration

1. Introduction

In response to the growing global competition, many manufacturing companies have embarked upon enterprise resource planning (ERP) implementation. An ERP system is an integrated software solution that spans the range of business processes that enables companies to gain a holistic view of the business enterprise. It promises one database, one application, and a unified interface across the entire enterprise [1]. 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. 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

* Corresponding author. Tel.: +1 785 532 6935; fax: +1 785 532 7809.
E-mail addresses: iehie@ksu.edu (I.C. Ehie), mogens.madsen@ementor.dk (M. Madsen).
[1] Tel.: +45 24 29 82 34; fax: +45 44 78 87 00.

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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. AMR Research recently reported that ERP is regaining momentum. The latest data shows the market for ERP will grow from US$ 13.4 billion in 2003 to a projected US$ 15.8 billion in 2008, a compounded annual growth rate of 3% [2]. Unfortunately, most ERP implementations have not lived up to their market expectations. ERP implementations are notorious for taking a longer time and costing more money than is projected. Too often, the best-laid plans for full organization integration become mired by system incompatibility, legacy issues, cost overruns, and time extensions [3]. This study presents the results of an empirical study that surveyed manufacturing companies in the Midwestern region of the USA to determine the critical issues affecting ERP implementation. With responses obtained from 36 companies, a factor analytic solution was used to derive factors affecting successful ERP implementation. These factors are feasibility and critical evaluation of ERP systems, project management principles, human resource development, business process reengineering, cost/budget issues IT infrastructure, consulting services, and top management support. The study reveals that about 86.3% of the variances in ERP implementation were explained by the critical factors identified in the study. Two ERP consultants with a combined 30 years experience worldwide in ERP implementations corroborated the results obtained in the study.

2. Past studies

Although ERP systems have gained major prominence in corporations throughout the western world, successful implementation of ERP in business processes continues to elude many companies despite high implementation costs that run as high as 3% of total revenue [4]. These failures were not because the ERP software were coded incorrectly, rather companies failed to match the true organizational needs and systems required to solve the business problems [5]. Unisource Worldwide, Inc. wrote off US$ 168 million when the company abandoned nationwide implementation of SAP software [6]. FoxMeyer Drug went bankrupt in 1996 and files a US$ 500 million lawsuit against SAP, an ERP software provider, blaming SAP for its woes [7]. Dell abandoned a highly publicized SAP implementation following months of delay and cost overruns [6]. The company claimed that SAP was too monolithic to be altered for changing business needs. Dow Chemical wrote off close to half a billion dollars when it switched from a mainframe-based ERP to a client/server architecture ERP system [6]. Implementing ERP causes massive changes that need to be carefully managed to reap the benefits of such complex systems. It is projected that over 70% of Fortune 1000 companies have or will soon install ERP systems and that ERP systems are penetrating the small-to medium size companies with gross revenue less than US$ 250 million [1]. The inability of these companies to realize competitive advantage from ERP implementation is attributable to failure of proper usage of technology to address changes in the design and structure of an organization. Organizations that realize full benefits of a technology are those that make necessary changes in their organizational structure, strategies, and processes [8].

A number of companies have improved their competitive position by implementing ERP in their business processes. The Earthgrains Company witnessed a net improvement in its operating margin from 2.4 to 3.3% in 1997 as a result of its ERP implementation [9]. The company also improved its on-time delivery to 99% thereby improving its customer satisfaction metric. Similarly, Par Industries improved its delivery performance from 60 to 95%, lead time to customers reduced from 6 to 2 days, repair parts reduced from 2 weeks to 2 days, and WIP inventory dropped 60% [10]. IBM Storage Systems reduced the time to ship a replacement part from 22 days to 3 days, and the time to perform credit check from 20 min to 3 s [11]. By using SAP, the Daimler-Benz and Chrysler merger was able to shave close to ten years in its integration effort [12]. By working together, ERP systems helped Federal Express avoid "isolated kingdoms" [9].

Business process integration is more costly, almost by a factor of 3–10 than the ERP software itself. These costs are driven by a variety of factors which include the high consultancy fees charged by consultants and systems integrators, the heavy reengineering focus