Chapter 44
Reengineering for Enterprise Resource Planning (ERP) Systems Implementation:
An Empirical Analysis of Assessing Critical Success Factors (CSFs) of Manufacturing Organizations

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ABSTRACT

Reengineering is a concept that is applicable to all industries, particularly information and communication technology (ICT) projects regardless of organizational type, size, culture, or location. The enterprise resource planning (ERP) system frequently requires organizations to change their existing business processes to harmonize them its functional activities. 72% of the ERP implementation failures reported worldwide (Eric, 2010) because of the various critical success factors (CSFs). A Critical Success Factor (CSF) is defined as a factor needed to implement ERP system successfully. Assessing the importance of CSFs of Enterprise Resource Planning systems has always remained an important concern for academicians and researchers. This study explores and assesses the CSFs affecting the ERP implementation success. Long term Top management Support (LTS), Perceived ERP benefits (PEB), ERP in-house Training (EIT), Project Tracking (PTG), Visible Project Phases (VPP), Project Phase Update (PPU), Interdepartmental Cooperation (IDP), Strategic IT planning (STP), ERP vendor Support (EVS), and Data Analysis and Conversion (DAC) were found dominant critical factors for the success of the ERP implementation in the manufacturing sector. This study investigates how many CSFs are strongly correlated with each other for the success of ERP projects in the manufacturing sector. Furthermore, this study also tests empirically using the Statistical Package for Social Science Analysis of Moment on Structures (SPSS AMOS 18.0) to justify the level of CSFs among the local and joint-venture companies using a t-test analysis.

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1 INTRODUCTION

An organization must proactively reengineer and plan for changes to business process before implementing a particular ERP module. The following are the important modules of ERP: sales and distribution, production planning, financials and controls, material management, and human resource management. Critical success factors (CSF) help implementing ERP system successfully. Alaranta (2006) pointed out the growth of information systems in the organizations resulted in the production of significant amounts of information for analysis and decision making which leads to the success of the information system projects, in particular enterprise resource planning (ERP) systems. Many research studies discussed numerous CSF factors that are needed to minimize the ERP failure rates (Eric, 2010; Cotran et al. 2005; Deloitte, 2005; Esteves, 2005; Al-Mashari, 2003; Nah & Lau, 2001).

A legacy system is an operational system that has been designed, implemented and installed in a radically different environment than that imposed by the current ICT strategy (Tromp & Hoffiman, 2008). The only reason a new system is developed is to replace an aging system (i.e. legacy system) that is failing to meet current enterprise needs. Ransom et al. (1998) pointed out that legacy systems are usually critical to the business in which they operate, but the costs of running them are often not justifiable. Furthermore, the legacy system contains the existing information technology (hardware and software), business processes, organization structure, and culture.

Appropriate business and legacy systems are important in the initiation stage of the project life cycle. Because of integrated nature of the ERP package, there is a choice to be made on the level of functionality and approach to link the system to legacy systems. In addition, to best meet business needs, companies may integrate other specialized software products (i.e. third party software packages or interfaces) with the ERP suite (Nah & Lau, 2001).

Many researchers highlighted that ERP implementation involves a complex transition from legacy information systems and business processes to an integrated IT infrastructure and common business process throughout the organisation (Al-Mudimigh et al. 2010; Jarrar et al. 2000; Gibson et al. 1999).

Al-Mashari (2003) and Seethamraju (1999) suggest that future ERP systems will be developed based on components rather than modules and will be designed for incremental migration rather than massive reengineering. Furthermore, Sato *et al*. (1999) identified several areas for future research, including integrating ERP and other business intelligence systems such as customer relationship management (CRM), supplier relationship management (SRM) and business data warehousing (BDS).

Most authors preferred an incremental approach to implementing either the business process reengineering (BPR) or ERP systems (Tromp & Hoffiman, 2008; Calvert, 2006; Robey et al. 2002). Hill (1994) pointed out rapid IT innovation and increasingly intensive global competition as two main reasons why organizations have had to consider the introduction of radical change. Reengineered processes drive the shape of an organization. These radical changes are not limited to inside the organization but can go beyond to other organizations, which generate innovative views for an organization (La Rock, 2003).

Most researchers lately found the actual acceptance of incremental or cyclical Enterprise Systems (ES) implementation approaches are slowly beginning to become authentic. In the last century the incremental implementation of ES was mentioned (Nagaraj et al. 2010; Mezeszaros & Aston, 2007; Karimi et al. 2007; Katsma & Spil, 2003). But the massive technology behind the ERP systems at first forbidden actual incremental implementation approaches. This technological hurdle is only slowly disappearing via the implementation of for example service oriented architecture (SOA) or software as a service (SAAS) based technologies.