

# Chapter 2.18

## Integrating Enterprise Systems

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### INTRODUCTION

In the last two decades many organizations installed enterprise resource planning (ERP) systems as a means to integrate their back-office operations. The need for integration, however, actually amplified with the advent of ERP. In addition to integrating ERP with legacy systems, consolidating multiple copies of ERP running in different business units posed major challenges. Moreover, recent strategic initiatives such as customer relationships management (CRM), supply chain management (SCM), business to consumer (B2C), and business to business (B2B) all require a free flow of information between ERP and other enterprise systems to be successful. It is, therefore, more critical than ever to plan for and implement integration projects involving ERP properly. Hwang (2005) describes the need for integrating enterprise systems in detail. He also discusses several success factors cited in practitioner journals. Since then a handful of empirical studies have been published in the scholarly literature. This article provides a review of those

studies with a special focus on the success factors. A consolidated list of success factors is developed for practitioners. Promising research directions are discussed.

### BACKGROUND

While researchers have examined integration issues for some time, it was not until the early 2000s that empirical studies involving ERP began to appear in the literature. Table 1 summarizes the characteristics of the five empirical studies reviewed, and Table 2 summarizes the critical success factors (CSF) discussed. Alshawi, Themistocleous, and Almadani (2004) investigated the feasibility of minimizing ERP customization through integrating two ERP packages. They found that an enterprise application integration (EAI) tool was useful in integrating SAP R/3 with an Oracle H/R module at a telecommunication company. Sharif, Irani, and Love (2005) studied the integration project of a global industrial company involving ERP and legacy systems. The integration effort was deemed unsuccessful based on a post hoc evaluation model that they devel-

DOI: 10.4018/978-1-60566-026-4.ch328

Table 1. Study characteristics

| Study                          | Case Study   | CSF Model |
|--------------------------------|--|-----------|
| Alshawi et al. (2004)          | Integrating two ERP systems                          | No        |
| Sharif et al. (2004)           | Integrating ERP with legacy systems                  | Yes       |
| Lam (2005)                     | Integrating ERP with legacy systems                  | Yes       |
| Mendoza et al. (2006)          | Integrating ERP with legacy systems; B2B integration | Yes       |
| Stefanou and Revanoglou (2006) | Integrating ERP with legacy systems                  | No        |

oped. Lam (2005) proposed a CSF model for EAI projects. He termed this the BOTP model, after the categories into which the success factors fall: business, organization, technology, and project. A case study involving a large financial services provider integrating its consumer banking systems revealed three broad groups of success factors: top management support, integration strategy, and project planning and execution. Mendoza, Perez, and Griman (2006) developed a set of 20 CSFs and tested them in two case studies, one in a B2B and the other in an ERP setting. Many but not all of the success factors were present in the two companies. Finally, Stefanou and Revanoglou (2006) examined a successful ERP implementation at a hospital.

Alshawi et al. (2004) and Stefanou and Revanoglou (2006) did not discuss their findings in the context of some type of success models. The three studies that did classified various CSFs by their types (e.g., organization vs. technology) or the type of integration involved (e.g., intra- vs. inter-organization). One group of variables discussed by Sharif et al. (2005), for instance, deals with ERP II tailorability, the ability to integrate ERP with customers via CRM and B2C and with business partners via SCM. Building on the maturity model of Schmidt (2000), Mendoza et al. (2006) developed their list of CSFs based on different levels of integration, from level one point-to-point integration to level four external integration. Lam (2005) does not distinguish internal from external integration projects but acknowledges that some factors such as “process

interoperability with business partners” are more important in inter-organization settings than in intra-organization settings.

Table 2 organizes the CSFs into four groups of Lam (2005): business, organization, technology, and project. This is a general classification scheme into which any success factor can be classified. At the same time, it makes sense to differentiate factors that are oriented toward more external integration or ERP II tailorability (Sharif et al., 2005) than internal integration. Those external-oriented factors are boldfaced in Table 2. It is, however, important to note that the internal/external dimension should be treated as a continuum rather than a dichotomy because some factors apply to both intra- and inter-organizational settings (Mendoza et al., 2006)

## CRITICAL SUCCESS FACTORS

As can be seen in Table 2, the success factors discussed by different researchers share a number of commonalities. A consolidated list of success factors is presented in Table 3, with factors that are either common across different studies or fit closely with the theme of each category. As shown in Table 3, for instance, the theme of the business factors category is to define the value and strategy of integration. The list in Table 3 is concise and presented in an easy-to-use format for practitioners. It can be expanded or modified as more studies appear in the literature in the future.

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