

Improving enterprise resource planning (ERP) fit to organizational process through knowledge transfer

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Abstract

Critical to enterprise resource planning (ERP) implementation is the fit between the system and the processes in an organization. Knowledge about the ERP system must flow from those implementing the system and those responsible once in production. Effective knowledge transfer is assisted by the absorptive capacity of the learner and the competence of the knowledge holder, as reflected in the client and consultant relationship of this study. A model of transfer is composed from existing theories of learning to explain the roles played by the client through absorptive capacity and the consultant through competence. Survey data of CIOs in Taiwan confirm that transfer is improved with higher levels of capacity and competence, while the transfer process leads to a better fit between ERP systems and organizational processes. Management needs to foster the build-up of their internal knowledge stocks in order to stimulate the flow of knowledge transfer.

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1. Introduction

Approximately 90 percent of enterprise resource planning (ERP) implementations are late or over budget (Martin 1998) and 70 percent of ERP implementations fail to deliver anticipated benefits (Al-Mashari, 2000). Although the literature describes multiple reasons for this poor record of performance, gaps between the functionality offered by an ERP system and that required by the particular organization are common (Everdingen, Hillegersberg, & Waarts, 2000; Swan, Newell, & Robertson, 1999; Umble & Umble, 2002). The difficulties are expanded by customer organizations requiring unique business solutions and ERP vendors having a generic solution sold to a broad market.

Thus, one large factor in the improvement of the success rate is the mutual adaptation between the IS and user environment (Markus & Robey, 1988). Such an adaptation process must align the organization's existing

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operating processes and the packaged software's embedded functionality through a combination of software configuration and organizational change (Hong and Kim, 2002). Such IS-driven initiatives require change of the organization's socio-technical system, which is intertwined of technology, task, people, structure, and culture (Laughlin, 1999).

While these above resolution strategies were employed to tackle the problem of misfits, other researchers found that an existence of significant knowledge gap among the stakeholders which could potentially cause the unsuccessful implementation (Markus & Tanis, 2000; Soh, Sia, & Tay-Uap, 2000). ERP implementation is a knowledge intensive process; it requires a great deal of experience from many different stakeholders, and requires these individuals to interact extensively during the implementation process. The knowledge gap risks configuration errors and unnecessary customization, but also conflicts between the different parties involved (Pan, Newell, Huang, & Cheung, 2001; Sumner, 2000). The need for closing this knowledge gap in the ERP project is therefore important (Huang & Newell, 2003).

Studies about ERP implementations focus on identifying critical success (and/or risk) factors associated with ERP implementations, one of which is the impact of knowledge transfer (Chan & Rosemann, 2001; Jones, 2001; Lee & Lee, 2000; Parr, Shanks, & Darke, 1999; Volkoff & Sawyer, 2001; Willcocks & Sykes, 2000). While an organization may lack necessary experience or knowledge for ERP implementation, it could nonetheless transfer this knowledge from external sources such as consulting firms (Timbrell & Gable, 2001). As a result, the members in an ERP implementation team could include representatives from business departments, technical specialists from the IT department, project managers within the organization, and consultants (Davenport, 1998; Roberts, Leigh, Purvis, & Parzinger, 2001).

Based upon the knowledge stock-flow theory proposed by Dierickx and Cool (1989), this study proposes that consultant competence and the adopting firm's absorptive capacity are two critical factors influencing the effectiveness of knowledge transfer during ERP implementation. Effective knowledge transfer from a competent consulting firm to the client will leave the client better positioned to maintain and evolve its system, thus leading to a better fit between the system and the client's processes (Davenport, 2000). Absorptive capacity refers to the ability to contain the knowledge transferred and is based primarily on existing knowledge stock to frame and retain additional knowledge. Firms should possess a high level of absorptive capacity to effectively value, assimilate, and apply the external knowledge acquired from consultants into their business processes (Cohen & Levinthal, 1990).

The purpose of this study then is to understand the environment that enables effective knowledge transfer between consultants and the client and whether more effective knowledge transfer would lead to an ERP system better matched with the client's process requirements. Specifically, the knowledge stock-flow theory proposed by Dierickx and Cool (1989) is adopted to examine the causal relationships between consultant competence, the client's absorptive capacity, and knowledge transfer and eventual ERP process fit. In addition, Soh et al. (2000) suggested that the organizational fit of ERP might be worse in Asia, because the reference process model underlying most ERP systems is influenced by European or US industry practices. Thus, Asian organizations provide a rich sample opportunity for possible ill fit. The contribution of this study is to not only confirm the stock-flow model but also add to our understanding of how both internal knowledge transfer capability and external sources of knowledge can impact the eventual organizational fit to ERP.

2. Background and hypotheses

Researchers have conceptualized ERP implementation as an organizational learning process (Davenport, 2000). In this study, organizational learning theory was adopted to explain the knowledge transfer between consultants and clients in the ERP implementation process. In this section, we first review the organizational learning theory and then review the constructs relevant to the research model.

2.1. Organizational learning theory

Scholars have used different perspectives to investigate organizational learning issues. Recently, many researchers have advocated the "process-orientation" perspective (Crossan, Lane, & White, 1995; Huber, 1991; Lee, Courtney, & O'keefe, 1992). For example, Argyris and Schon (1978) suggested that organizational

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