Chapter 2
ERP Implementation Model, Research Findings, and its Applications to Government

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ABSTRACT

An ERP implementation model is developed with the help of a review of relevant literature. This implementation model has four phases: preparation and training, transition, performance and usefulness, and maintenance. Research findings from our study provide empirical support for the ERP implementation model. For the purpose of this chapter, we use content analysis of the structured interviews to come up with solutions and recommendations for ERP implementation in government. We finally present the conclusion and future directions.

INTRODUCTION

Enterprise Resource Planning (ERP) Systems have been developed to help organizations integrate and better manage information within and also with their business partners.ERP systems match the information flow with the physical flow of goods, from raw materials to finished goods. ERP is also an efficient approach to fine tune a company's internal value chain. Most mid-size to large organizations have or will have ERP systems. The government sector (example: state of Pennsylvania in USA) also has adopted ERP systems. Many difficult and costly implementations of ERP systems have been tried in many organizations including FoxMeyer Drug, Dell Computer, Applied Materials and Dow Chemi-

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cal (Davenport, 1998). Some studies point to more than half of ERP implementations end in failure (Banker et al, 1988). Poorer results with 75% of ERP projects judged to be unsuccessful are mentioned in other research (Hong and Kim, 2002). Studies also state that it is believed that 90% of ERP projects are late (Scott and Vessey, 2002). As a result, it is extremely important to understand ERP implementation and specifically for government applications.

A phased implementation approach is highlighted from our research (Peslak et al, 2008). Our main thesis is that it is important to have a structured approach, similar to systems development, for the implementation and maintenance of ERP systems. We substantiate this statement based on our research study (Peslak et al., 2008) that shows that preparation and training, transition, performance and usefulness, and maintenance phases exist in ERP implementation of organizations and these phases positively influence the preferred use of ERP systems. The purpose of this chapter is to present this phased ERP implementation approach, our findings from (Peslak et al, 2008), and content analysis of interviews to help us come up with recommendations and applications of our ERP implementation model to government. Specifically, the main contribution of the chapter is to illustrate how the ERP implementation approach is helpful to government, supported by examples from a content analysis of interviews.

Using data from two manufacturing divisions that have implemented an ERP, our research (Peslak et al, 2008) aims to identify major phases in ERP implementation. We would like to see if these ERP implementation phases would be as helpful in ERP implementation as the Systems Development Lifecycle (SDLC) is to traditional systems implementation. The SDLC, per se, is not applicable to ERP implementation as ERP is often associated with "buying" software and implementing it within the organization.

BACKGROUND

Boudreau and Robey(2005) suggest that it is important to obtain acceptance of ERP systems. Currently they note that if not successfully implemented, users may work around the system and otherwise doom the project to costly duplication of effort, or worse, system failure. A phased implementation approach is highlighted in Robey et al, (2002).

Systems development theory uses the concept of a lifecycle and stages in the lifecycle to indicate development of information systems. The waterfall model, incremental model, RAD (rapid application development) model and spiral model are some of the systems development methods prevalent in the literature (Pressman, 2004). Newer approaches to systems development address component-based development using off-the-shelf packages, agile development and the unified process for object-oriented software development (Pressman, 2004). The newer approaches have fewer stages in the development of systems. For example, the unified process model which draws upon the best practices of conventional software process models (Pressman, 2004) has inception, elaboration, construction and transition phases.

Empirical research has addressed issues that organizations face during and after implementation of systems. Specifically, several studies have looked at ERP implementation ([Akkermans and van Helden, 2002], [Hong and Kim, 2002], [Robey et al., 2002]). The implementation and performance stage model ([Kwon and Zmud, 1987], [Cooper and Zmud, 1990]) is a useful tool for understanding the implementation of the ERP technology and provides six stages: initiation, adoption, adaptation, acceptance, routinization, and infusion. This six-stage model sets the framework to investigate the implementation and performance issues of utilizing an ERP system within an organization. The initiation stage analyzes the factors that influence the decision to utilize an ERP system such as incompatibility, need for