Chapter V

The Impact of Enterprise Resource Planning Systems on Organizational Effectiveness: An Artifact Evaluation

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Enterprise resource planning (ERP) systems have an organizational impact and are in most cases implemented to improve organizational effectiveness. Shortcomings in current research make it difficult to conclude how an organization may be affected. This paper presents an artifact evaluation of the functionality and perceived benefits of ERP systems. The evaluation is based on the competing values model. The evaluation shows that ERP systems support effectiveness criteria (such as control and productivity) related to internal process and rational goal models. The evaluation also points out weaknesses in ERP systems and especially in areas related to human relations and open systems models. The result of the evaluation is used to discuss the impact of ERP systems on organizations and is presented as a series of hypotheses.

INTRODUCTION

The term enterprise resource planning (ERP) systems (also referred to as enterprise systems) is used as a generic label for large integrated application software packages. These information systems are by many regarded as a dream come true and are in most cases implemented in order to improve organizational effectiveness (Davenport, 1998; Davenport, 2000; Markus & Tanis, 2000). Studies show improved organizational effectiveness such as business process improvement, increased productivity, and improved integration between business units (Davenport, 2000). Davenport (1995, p. 32) described the implementation of ERP as "*perhaps the world's largest experiment in business change*" and for most organizations "*the largest change project in cost and time that they have undertaken in their history*." The same studies also described cases where the implementation failed and the impact had the opposite affect on organizational effectiveness. The only thing known for certain is that implementation is very resource-consuming. The impact and benefit of the implementation is unclear (Andersson & Nilsson, 1996).

The ability to determine the impact of such systems on organizational effectiveness would be of great importance from both theoretical and practical perspectives. However, this determination is difficult for several reasons: 1) it is not possible to draw an explicit conclusion from the IS benefit research (e.g., DeLone & McLean, 1992; Seddon, Staples, Patnayakoni, & Bowtell, 1999) on the impact of ERP systems; 2) the inconsistent and contradictory findings from research on information technology and organizations (Robey & Boudreau, 1999); 3) The lack of research on ERP systems (Shanks, Seddon, & Willcocks, 2001) makes it difficult or even impossible to draw conclusions with regards to a specific organization; 4) the complexity and comprehensiveness of ERP systems as such; and 5) the measurement of the effectiveness of an organization is an elusive, complex and socially constructed concept (Campbell, 1977).

The objective of this chapter is to evaluate the functionality of ERP systems in order to increase the understanding of how ERP systems may affect organizations and organizational effectiveness. The next section introduces changes in the requirements specification and arguments from IS research as a background for conducting an artifact evaluation of ERP systems. The subsequent sections present the interpretive artifact-evaluation approach, with an evaluation framework based on the competing values model (Quinn & Rohrbaugh, 1981, 1983), the ERP system in question (SAP R/3), and the outcome of the evaluation. In the final section the results are summarized and presented as a series of hypotheses speculating how ERP systems might affect organizations and organizational effectiveness. Future research directions are also suggested.

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