



# Implementation costs of IS-enabled organizational change

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## Abstract

Organizations incur substantial costs in managing organizational changes associated with the implementation of information systems (IS). However, the relationship between organizational changes and IS implementation costs is not well understood. Extending current research on IS-enabled organizational change, we draw on configuration theory to develop propositions identifying drivers of IS implementation costs. To test the propositions, we analyze the changes and implementation costs involved in three IS implementation initiatives. The analysis confirms that interdependencies between changes are key drivers of IS implementation costs. Implications for theory and practice are discussed.

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## 1. Introduction

Organizations incur substantial costs in managing the changes associated with the implementation of information systems (IS). Therefore, it is important to be able to estimate these costs prior to the implementation effort in order to assess the economic feasibility of an IS initiative and to commit adequate resources to the implementation effort

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(Ryan, Harrison, & Schkade, 2002). However, these costs are often underestimated or even ignored in organizational decision processes associated with IS project funding and implementation planning (Ryan et al., 2002). One explanation for this is the absence of a theoretical framework for understanding the effects of anticipated organizational changes on IS implementation costs (Ryan et al., 2002).

This paper extends prior research, drawing on configuration theory to identify drivers of IS implementation costs. Specifically, we identify interdependencies among the organizational changes associated with an IS implementation as key drivers of those costs. The paper begins by introducing a configuration-based framework for analyzing IS implementation costs and developing a set of propositions that follow from this framework. Next, the propositions are assessed via analysis of qualitative data from three case studies. Finally, implications for research and practice are discussed.

## 2. IS implementation costs

Organizations expend considerable resources to successfully implement IS applications (Table 1), in addition to the costs expended on acquiring and/or developing the application. These resources include many which can be procured externally or from an internal information services function, including trainers to develop end user skills, change management consultants, technology consultants, work process analysts and software engineers for software modifications and integration services. Estimates of the monetary costs associated with such resources are typically obtained from the information service providers (external or internal) and are readily available to organizations to consider them in planning and evaluation decisions.

In addition to the costs on information services resources, organizations also expend considerable internal resources on managing the changes associated with IS implementation.<sup>1</sup> These include, for example, the extensive engagement of top and middle managers in efforts to mutually adapt an information system to its organizational context, in orchestrating changes in organizational structures and processes, and in resolving the conflicts that invariably arise (Markus, 2004; Sharma & Yetton, 2003); the deployment of “super users” to train other users (Carte, Schwarzkopf, Shaft, & Zmud, 2005); and the efforts of end users to learn and adapt to the new technologies (Kang & Santhanam, 2003–04; Sharma & Yetton, 2007). In addition, organizations experience considerable time lags in achieving routinized use of IS, often experiencing performance declines during those periods (Leonard-Barton, 1988). Frequently, organizations fail to account for the costs of such internal resources expended on IS implementation in their IS investment decisions and implementation planning (Ryan et al., 2002).

We thus define IS implementation costs as consisting of the costs borne by an organization for both the external and internal resources expended to achieve routinized use of new IS applications. These costs are frequently substantial and, in some cases, they exceed the acquisition and/or development costs (Leonard-Barton, 1988; Markus & Keil, 1994; Soh & Sia, 2005). For example, Sauer (1993) describes the high costs experienced when

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<sup>1</sup> We acknowledge that the term implementation is employed inconsistently in the literature. Here, we use the term to refer to the stage in the SDLC where an already acquired/developed system is introduced to its operational context.

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