The Impact of ERP Systems on Organizational Performance:
The Role of Antecedents and Moderators

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ABSTRACT

Research on the link between investments in ERP systems and organizational performance has often led to mixed results. Besides internal organizational factors, many external contextual factors come into play. This study examined the role of firm size, industry, and duration of ERP system's use in influencing the performance impact of ERP systems through moderating the relationships between antecedent variables, ERP-induced benefits, and improvement in overall organizational performance. Using a sample of 200 participant firms, and structural equation modeling (SEM) analysis, the author confirmed the significant role of business process re-engineering and organizational fit and alignment as antecedents to ERP-induced benefits in information quality, and coordination/integration. Data and information quality was in turn confirmed as a significant predictor of organizational performance. Furthermore, the roles of industry, firm size, and time elapsed were also confirmed as significant moderators to the influence of the antecedent variables on ERP benefits and organizational performance.

KEYWORDS

Antecedents, Business Process Re-Engineering, Contextual Factors, Enterprise Resource Planning, ERP-Induced Benefits, Moderating Variables, Organizational Fit, Organizational Performance

INTRODUCTION

An Enterprise Resource Planning (ERP) system is an enterprise application that embodies an implementation of the core business processes and administrative functions within the entire organization. Although there is an abundance of definitions (Acar et al., 2017a; Beheshti & Beheshti, 2010; Davenport, 1998; Holland & Light, 1999; Klaus et al., 2000; Shaul & Tauber, 2013), an ERP system is fundamentally characterized with four salient features: cross-functional integration, a central and shared database, embodiment of best industry practices, and a modular architecture—all intertwine and collectively serve to produce a comprehensive, consolidated, and unified view of the organization

and its operations. Influenced by technology and competitive dynamics, business organizations are increasingly moving towards more inter- and intra-organizational integration to enable and facilitate more efficient execution of transactions and flow of information resources between the different organizational units. Enterprise systems have played a pivotal role in these transformations, as evidenced by the evolution of Material Requirement Planning (MRP) to Manufacturing Resource Planning (MRP II), then to Enterprise Resource Planning (ERP) systems. The latter systems are increasingly fanning out and bridging inter-organizational boundaries to link separate business partners and alliances.

The Information Systems (IS) literature makes generous claims about numerous ERP system benefits, tangible and intangible, operational and strategic, accruing to the adopting organization (Gabryelczyk, 2020; Khattak et al., 2013; Uddin et al., 2020; Usman et al., 2019). Empirically, however, the evidence to support these claims is either lacking or inconclusive. Indeed, there is plenty of evidence to refute a considerable proportion of this ever expanding list of potential ERP benefits, thanks to more than two decades of IS research devoted to the issue of Information Technology (IT) benefits and performance impact on the organization. Thus, although the well-known IT productivity paradox has long been settled, the question of just what an ERP system can do for an adopting organization, in return for the huge cost needed to implement these costly systems, remains an ever relevant and not sufficiently answered question to date.

There is a great deal of empirical research to date that has explored the impact of ERP systems on organizations. However, existing IS research has produced either of three conclusions: 1) investments in ERP projects failing to achieve expectations, 2) positive outcomes and impact on organizational performance, and 3) mixed, and often conflicting, results regarding the overall impact of ERP systems on organizational performance. Moreover, a preponderance of the existing IS research focuses primarily on the success (or failure) of the ERP implementation project, rather than on the post-implementation impacts of these systems (Alzoubi & Snider, 2020; Coşkun et al., 2022; Gattiker & Goodhue, 2005; Hietala & Paivarinta, 2021; Mahraz et al., 2020; Motiei et al., 2015; Nour & Mouakket, 2011; Shatat & Shatat, 2021). Yet implementation success stories are not guaranteed to extend beyond the "go-live" stage (i.e., post-implementation). Additionally, post-implementation success indicators, focusing on broad organizational performance parameters, are fundamentally more strategically oriented than implementation success indicators.

It can be argued that organizations, with all their idiosyncrasies, exist in their own dynamic environments that are characterized with unique constraints and contextual factors. Consequently, the performance benefits of ERP systems are presumed to be influenced by an array of organizational and environment antecedents, which may include, inter alia, such factors as business process redesign, top management support, organizational culture, user training and support, and organization fit or alignment with the ERP system (Amade et al., 2022; Hasan et al., 2019; Tarigan et al., 2020; Vargas & Comuzzi, 2020). These factors serve as contextual elements characterizing the overall environment that determines the extent of the ultimate performance impact on the organization (Ruivo et al., 2014; Uwizeyemungu & Raymond, 2012). Therefore, any discourse about ERP systems impact cannot ignore these differences in environmental and organizational contexts. But that is precisely what a substantial number of research studies have done, largely ignoring these important contextual factors, such as industry, size and age of the organization, business alliances and interdependencies, etc., that might account for the presence or absence of any significant ERP performance outcomes. An inevitable consequence of the disparate approaches and foci of existing ERP literature is the inconsistent results produced by these studies.

A prime goal of the present research is to examine the post-implementation impact of ERP systems on the overall organizational performance by considering not only the requisite conditions (factors) for the ERP-induced benefits to take effect (impact), but also the contextual factors that might moderate such impact. More specifically, building on the works of Chou and Chang (2008), and Gattiker and Goodhue (2005), and guided by the process and the Technology-Organization-Environment (TOE)

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