Chapter VIII ERP-Driven Performance Changes and Process Isomorphism

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ABSTRACT

After observing that the pervasiveness of IT may soon render it strategically irrelevant, management scholars have recently questioned the value of information technology. This chapter challenges the above view, contends that ERP investments may contribute to the achievement of improved business performance, and examines the conditions under which this contribution occurs. The panel analysis of a sample of SAP R/3 adopters provides several insights. First, it suggests that the ERP exerts a generalized positive impact on both productivity and profitability. Second, the results confirm that the widespread diffusion of best practices embedded in the software may limit the ability of firms to use ERP to effectively differentiate from competitors. However, they also suggest that, whilst in the long run the pervasive diffusion of standardized software may decrease its strategic value, in the short run early ERP adopters can profit from a window of opportunity to obtain above average returns.

INTRODUCTION

The rising level of competitiveness and the high degree of market turbulence of most industries induces business organizations to increase their investments in information technology (IT) to improve the efficiency and responsiveness of operations. Enterprise Resource Planning (ERP¹) applications represent perhaps the most relevant example of this trend. ERP has become prevalent over the last few years, particularly in the manufacturing sector (Scott and Shepherd, 2002). Investments in this technology continue to grow steadily in all major markets. Compound annual

growth rates for 2005 ranged from 5.2% for the Europe, Middle East and Africa market (EMEA) to 11.8% for the Asia-Pacific region (Pang and Eschinger, 2006).

While highly complex, risky, and often characterized by difficult implementations, ERP applications have a clear appeal: they generate internal operations benefits and help firms improve their competitiveness. Yet, in spite of their pervasive diffusion, the benefits of ERP are still uncertain (Vemuri and Palvia, 2006). The scale of ERP projects suggests that ERP deployment should have a significant and measurable effect on firm performance (Hitt et al., 2002). However, there is conflicting empirical evidence regarding the benefits of ERP investments (Hayes et al., 2001; Poston and Grabski, 2001; Hitt et al., 2002; Cotteleer and Bendoly, 2006; Wieder et al., 2006). A significant amount of heterogeneity also exists across firms, as large and mostly unexplained performance differences have been observed across ERP adopters (Mabert et al., 2003; Umble et al., 2003).

Although management scholars and practitioners have dedicated a significant amount of attention to study enterprise systems, several gaps still remain in the literature. First, whilst most studies have sought to establish whether a link exists between ERP adoption and performance, few scholars have analyzed the conditions under which this link occurs. One important aspect that has been often neglected is the issue of adoption timing. As a result of the increasing uncertainty and of the high cost of ERP implementation, most companies prefer to defer their ERP projects and wait for newer and less complex versions of the software. Yet, deferring implementation is also risky because it causes delays in the realization of operational improvements. Very little research has been conducted to shed light on this trade-off and help managers in making this decision.

A second important aspect that has been overlooked is the extent to which the pervasive diffusion of standardized business process templates embedded in the ERP software may reduce the ability of firms to differentiate from competitors. Some scholars have indeed questioned the strategic value of IT, arguing that as the technology can be easily imitated, it does not bring any longterm competitive advantage (Carr, 2003). A few anecdotal examples have been used to support this claim. However, to our knowledge, very few studies have provided sound empirically grounded evidence for this hypothesis.

Finally, with the relevant exception of Hitt et al. (2002), most empirical studies seeking to establish a link between ERP and performance were based on cross-section analyses. A cross-section model enables the researcher to verify whether such a link exists at a particular point in time. Yet, it does not allow for the analysis of the long-term implications of the phenomenon investigated. In the case of ERP systems, which often exert their benefits several years after implementation, this is clearly a limitation.

These observations constitute the point of departure for our study. We use a panel data analysis to shed further light on the relationship between ERP adoption and performance. The study has three specific objectives: i) to quantify the average impact of ES investments on both productivity and profitability; ii) to examine whether the timing of adoption affects this impact; iii) to examine whether the widespread diffusion of best practices embedded in the software creates business process isomorphism and presents risks for the achievement of long-term competitive advantage.

The remainder of this chapter is organized as follows. In section 2 we provide some background on Enterprise Systems. In section 3 we develop three sets of testable research hypotheses. In section 4 we describe the data and the econometric approach used to test the hypotheses. In sections 5 we present and discuss the results of our analysis. Finally, in section 6 we discuss the implications and some limitations of our study, and we identify some avenues for future research. 12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

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