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# ERP Systems and the Strategic Management Processes that Lead to Competitive Advantage

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## ABSTRACT

*This paper describes the processes that firms and managers go through in their quests to create and sustain competitive advantages based on so-called Enterprise Resource Planning (ERP) systems. It is based on resource-based theory, combined with the strategy process perspective and with existing literature on information technology and ERP. The theoretic framework is extended through a detailed case study of a specific in-house ERP venture in a European multinational manufacturing company in the paper packaging industry. The emergent resource management framework describes cognitive and cultural factors that support or hamper progress, including uncertainty, knowledge gaps, knowledge transfer issues and the problems of ensuring that ERP usage is converted into competitive advantage. The framework also addresses managerial implications and potential solutions to such obstacles, throughout the process.*

*Keywords: ERP; IT strategy; competitive advantage*

## INTRODUCTION

The demand for so-called Enterprise Resource Planning (ERP) systems[1] has soared. Triggered by Y2K-compliance problems and the popularity of systems such as SAP's R/3, corporate investments in ERP have been significant over the last years. (In 2003, the global market was expected to reach $180 billion; source: AMR Research.) Research into ERP has focused on how these systems add value (Markus & Tanis, 1999; Ross & Vitale, 2000; Somers and Nelson, 2001), implementation issues (Parr et al., 1999; Scott & Vessey, 2001), and how they should be combined with other information technology (IT) resources (Hayman, 2000).

Being a relatively novel phenomenon, there are aspects of ERP that have not been covered well in research – yet. Two such interrelated issues are: 1) the relation be-

tween ERP and competitive advantage, and 2) the managerial and organisational processes that lead to ERP-based competitive advantage.

Relating to the first issue, it is still questionable whether investments in ERP systems have produced *competitive advantages* for investing companies, a question that is valid for IT in general as well. There is a shortage of empirical research on the specific matter, and the few references that do exist treat the issue of gaining competitive advantage in a relatively simplistic fashion (Kirchmer, 1998) or simply overlook it. The so-called *Resource-Based View* (RBV) provides a broader perspective because it focuses the sustainability of competitive advantage (Dierickx & Cool, 1989; Barney, 1991). Within IT, this need has been addressed by Clemons and Row (1991) and Powell and Dent-Micallef (1997) in the application of the so-called *competitive necessity* concept, and also by Ciborra (1994) and Bharadwaj (2000).

However, RBV too has limitations, for which it has been criticised (cf. Williamson, 1999; Eisenhardt & Martin, 2000; Priem & Butler, 2001). One such limitation is the relative focus on the strategy content (e.g., strategic resource attributes) rather than the strategy process (e.g., how resources become valuable and unique). In relation to IT, this stream of criticism corresponds to the second issue described above: not only is there lacking insight into the attributes of ERP resources that enable competitive advantage, there is also lacking insight into the processes that lead to ERP-based competitive advantage. Within the field of IT, only Ciborra (1994) and Andreu and Ciborra (1996) have addressed the importance of combining RBV with a process perspective. There is a relative focus on IT *content* or *conditions* (Mata et al., 1995; Powell & Dent-Micallef, 1997). The *processes* by which such advantages evolve, and how managers and users manage the IT resource to become a source of competitive advantage, are still relatively obscure.

The aim of this paper is to develop a framework that improves our understanding of the processes organisations go through as they try to gain competitive advantage based on ERP applications. This is done by addressing RBV and process theories, extended with theory on ERP. Subsequently follows a discussion of the method applied. In the next section, an emergent framework is presented, based on an analysis of how the empirical findings assist in developing the theory. The concluding section discusses the validity of the emergent framework and summarises managerial implications.

## THEORY ON RESOURCE MANAGEMENT PROCESSES

The core of RBV is the assumption that industries are heterogeneous and that resources are imperfectly mobile across firms within industries. This juxtaposes RBV from the *Industrial Organisation* perspective (Bain, 1968; Porter, 1980), which uses firm-external factors such as the "five forces" to explain competitive advantage. According to RBV, firms have competitive advantage when they have one or more resources that are *idiosyncratically fit, valuable, leveraged, unique, and costly to copy or substitute* (cf. Barney, 1986, 1991). Consequently, one preliminary assumption is that the overarching process of creating competitive advantage involves attempts to meet these resource attributes. For the sake of simplicity, the outline of the discussion about such processes can be structured in accordance with these tasks, or sub-pro-