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 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 pro-
cesses that lead to ERP-based com-
petitive advantage.

Relating to the first issue, it is still ques-
tionable whether investments in ERP sys-
tems have produced competitive advan-
tages 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 competi-
tive advantage in a relatively simplistic fash-
ion (Kirchmer, 1998) or simply overlook it.
The so-called Resource-Based View (RBV)
provides a broader perspective because it
focuses the sustainability of competi-
tive 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 com-
petitive advantage. Within the field of IT,
only Ciborra (1994) and Andreu and
Ciborra (1996) have addressed the impor-
tance 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 man-
age 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 understand-
ing of the processes organisations go
through as they try to gain competitive ad-
vantage 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 find-
ings 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 idiosyn-
cratically fit, valuable, leveraged, unique,
and costly to copy or substitute (cf.
preliminary assumption is that the
overarching process of creating competi-
tive 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 ac-
cordance with these tasks, or sub-pro-

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