Differential Effects on ERP Post-Adoption Stages across Scandinavian and Iberian SMEs

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ABSTRACT
Enterprise resource planning (ERP) post-adoption stages (use and value) and small and medium enterprises (SME) are of high interest among both academics and practitioners. Grounded in the diffusion of innovation theory to explain ERP use and resource-based view theory to explain ERP value the authors postulate that use is an important link to value. The authors propose and test a model using a unique dataset of 883 SMEs from Scandinavia and Iberia. Whereas for both regions, competitive pressure, efficiency, and best-practices are important factors to use ERP, analytics and collaboration are important factors for ERP value. Whereas complexity and training are not relevant for ERP use among Scandinavian SMEs, they are facilitators for Iberian firms. This is an empirical theoretically grounded research studying ERP use and value among SMEs across two distinct European regions, thus adding an international dimension to the IS literature, as well moving beyond dichotomous “adoption versus non-adoption”.

Keywords: Diffusion-Of-Innovation, Enterprise Resource Planning (ERP), Iberian, Resource-Based-View, Scandinavian, Small and Medium Enterprises (SMEs), Use, Value

INTRODUCTION
Enterprise resource planning (ERP) is an IT resource that supports business activities along the value chain (Bharadwaj, 2000). The ERP is considered as one of the most significant and complex technological innovations for a firm (Davenport & Harris, 2007). The value of ERP systems is an active research area in the information systems (IS) discipline. Although important, much of the existing literature has focused on the adoption decision, more precisely on “adoption versus non-adoption” (Huy, Rowe, Truex, & Huynh, 2012). However
innovation diffusion represents a complex process that starts at adoption and extends to use and value creation (post-adoption) (Devaraj & Kohli, 2003; Gattiker & Goodhue, 2005; Zhu & Kraemer, 2005).

ERP systems were initially implemented mostly in large organizations, and this has probably been the main reason for why research has focused on large enterprises. Although small and medium enterprises (SME) have been adopting ERPs for many years, the literature argues that little attention has been given to research on ERPs in SMEs (Chang., Hung, Yen, & Lee, 2010; Sharma, Elizabeth, & Colin, 2012) and even less on cross-national studies (Buonanno et al., 2005; Lee, Pin-Yu, & Hsien-Lee, 2012).

European firms are more and more adopting information systems to transform firm’s value-chain activities. According to the European Commission (2011), 99% of all European firms are SMEs with less than 250 employees. Although culturally disparate, both Scandinavian (Sweden and Denmark) and Iberian (Portugal and Spain) regions (Everdingen & Waarts, 2003), adhere to this profile, and with the same percentage. Because SMEs are the support of Europe’s economy, and are important for increasing productivity and gaining competitive advantage in the global economy. They are also important drivers of innovation and transformation.

The organizational applications and managerial implications of ERP systems play an important role in providing a deep understanding of the phenomenon to researchers and practitioners in the information resource management domain, and studying ERP use and value among SMEs across two distinct European regions is of special interest (Ramdani, Kawalek, & Lorenzo, 2009).

Motivated by these issues, this study seeks to improve the understanding of ERP on SMEs by inquiring:

**RQ1:** What are the factors driving ERP use and value in both Scandinavia and Iberia?

**RQ2:** What are the differences and similarities in ERP use and value across Scandinavia and Iberia?

To answer these research questions we developed a conceptual model based on a synthesis of two theories: diffusion of Innovation (DOI) and resource-based view (RBV). We empirically evaluate the joint model through a large-scale survey (883 firms) in Scandinavia and Iberia.

The paper is organized as follows: we next present the theoretical foundation. We then propose the conceptual model and hypotheses development, followed by the methodology and results. This paper closes with a discussion of major findings, contributions and limitations, and concluding remarks.

### THEORETICAL FOUNDATION

Unlike the typical focus on adoption (or intent to adopt), we focus on post-adoption stages, that is, actual use of ERP and value creation from ERP. Both are critical stages that impact a firm’s performance (Cooper & Zmud, 1990; DeLone & Mclean, 2003; Devaraj & Kohli, 2003; Tornatsky & Fleischer, 1990; Zhu & Kraemer, 2005) (Figure 1). Whereas ERP use refers to the production stage of system usage in firm’s daily business activities, ERP value refers to a firm’s ability to utilize ERP to create a competitive advantage to positively impact firm performance (Mata, Fuerst, & Barney, 1995; Rhodes, Lok, Yang, & Bambacas, 2009; Shahin & Ainin, 2011).

In accordance with Rai et al. (2006) and Porter (1998) firm performance may be measured through cost efficiency. As ERP systems greatly enhance cost efficiency, Nicolaou and Bhattacharya (2008) and Hitt et al. (2002) used accounting-based firm performance data to assess the impact of ERP on firm performance, more precisely on Return On Investment (ROI), Return On Assets (ROA), Return On Sales ratio (ROS), Inventory Costs (INVT), Cost of 

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