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Differences in ERP Value between Iberian Manufacturing and Services SMEs

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Abstract

Enterprise Resource Planning (ERP) system literature reports little research on the specificities of an industry analysis. Based on a theoretical model we assess ERP Value between Manufacturing and Services industries in Small and Medium Enterprises (SMEs) across the Iberian region (Portugal and Spain). The empirical test was conducted through structural equation modeling, using data from 261 firms. Results show that Firm size, Analytics and Collaboration contribute to ERP Value in those industries, with Analytics being more important for the Services industry.

1. Introduction

Enterprise Resource Planning (ERP) systems have been applied by many firms around the world as a key part of the organizational infrastructure. ERP encompasses a wide range of software products supporting day-to-day business operations and decision-making. ERP systems are expected to provide seamless integration of processes across functional areas with improved workflows, standardization of various business practices, improved order management, accurate accounting of inventory and better supply chain management [1, 2]. The ERPs are particularly important for manufacturing and services in Small and Medium Enterprises (SMEs) [3-5].

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Currently there is a process of structural change in Europe in which the share of manufacturing in the economy is declining while services are accounting for increasing shares of employment and value added [6]. The manufacturing and service industries are still the two main economic activities in the European Union [7, 8]. Several authors [9-11] state that SMEs are the backbone of Europe's economy, important for increasing productivity and gaining competitive advantage in the global economy, and also important drivers of innovation and transformation. Literature reveals that little attention has been given to research on ERP in SMEs, and even less on specific industries such as manufacturing and services [12]. To fill the gap, this paper addresses the following research question in the SME context: What are the drivers and differences in ERP Value between manufacturing and services industries?

To answer this question we tested a conceptual model based on Resource Based-View theory (RBV) previously published at CENTERIS 2016 [13] to explain ERP Value. To test the model we collected data of SMEs in the Iberian Peninsula region across manufacturing (158 firms) and service (103 firms) industries. Theoretical perspectives are presented next, then in Section 3 the research model and hypotheses are explained**.** The methodology is presented in Section 4, followed by results, discussion and conclusions.

2. Theoretical Perspectives

2.1. ERP adoption in Manufacturing and Service firms

ERP systems have traditionally been used by capital-intensive industries such as manufacturing, which were also more targeted by ERP vendors than the services industry [3]. However, more recently, there has been an increase of ERP systems implementations in the services industry [3].

It has been argued that the industry in which the firm operates influences the adoption of Information System (IS) innovations. Recent findings reveal that in the European context the most important feature to characterize Information Technology (IT) adoption is the industry and its specific characteristics rather than the country the firms belong to [5, 14, 15].

The services industry is quite unlike the manufacturing industry [16]. The growth of services in the European Union 27 countries raises questions about the adequacy of our understanding of innovation activities in service-dominated economies, especially as innovation is regarded as fundamental to the competitiveness of advanced economies [17]. Different industries have different operating characteristics and environments, and the factors related to ERP use and value may differ accordingly [11, 18]. As a result, it is also expected that there will be systematic differences in the actual use of ERP systems and related value creation between firms from manufacturing and services industries.

2.2. ERP Value and RBV theory

The RBV theory remains the dominant theoretical explanation of IT business value and many IS researchers have employed the resource perspective to expand and deepen the understanding of IT business value [19-21]. RBV sustains that a firm is able to create value by combining heterogeneous resources that are economically valuable, difficult to imitate, or imperfectly mobile across firms [22, 23]. In the IS literature RBV has been used to analyse how IT business value can be explained by the IT capability resource [24, 25]. Thus, an ERP system business value depends on the extent to which ERP systems are used in the key activities from the firm's value chain [11, 26]. The creation of value requires capabilities to effectively use ERP systems in the post implementation phase [27] and several studies have concluded that ERP systems can lead to sustained, competitive advantages [28, 29]. In line with RBV, the present study will take into account variables that can be perceived as valuable resources, to better understand how those resources can be used to improve firm performance and thereby to extract value from the ERP.

3. Research model and Hypotheses

ERP helps companies to develop appropriate functionalities to leverage firm performance, thereby contributing to value creation. It is hypothesized that ERP Value is explained by four determinants: ERP use, Collaboration, Analytics, and Firm Size. The conceptual model developed to assess the value of ERP is presented in Figure 1.