



## Full length article

## Enterprise resource planning adoption and satisfaction determinants

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## ARTICLE INFO

## Article history:

Received 6 January 2016

Received in revised form

29 May 2016

Accepted 31 May 2016

## Keywords:

Enterprise resource planning

ERP

Adoption

User satisfaction

## ABSTRACT

Enterprise Resource Planning (ERP) systems are at the core of every firm. Making people use this costly and time-consuming investment is one of the most important issues to deal with. The main objective of the present study is to find the key determinants that open the door to user satisfaction and adoption. A theoretical model was set and an online survey was conducted to understand ERP users' perspective on such matters. The outcome was the model validation and the understanding that top management support, training, and the system quality are important constructs to assess adoption and user satisfaction. In fact, the latter (system quality) has a significant influence on the behavioural intention to use and also in the overall user satisfaction. As management support is a very relevant determinant to ERP usage. Accordingly, this study enlightens theory, by contributing to a new model of ERP adoption and satisfaction. It also provides relevant evidence to companies involved in the ERP implementation process.

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## 1. Introduction

In an increasingly competitive globalized market, the key to organization's success is the ability to maintain and increase that competitive advantage (Porter, 1991).

In this new paradigm, organisations cannot compete on their own. Success can only be achieved through cooperation with other organisations like truly integrated and flexible supply chains (Lambert & Cooper, 2000).

Enterprise Resource Planning (ERP) is a natural evolution of the 80's manufacturing resource planning (MRP II), inheriting all the concepts and theories that date back to the 60's with first attempts to rationalise lead times and possession stock costs. ERP rapidly became the standard enhancing operational efficiency with the integration of business processes throughout all organization (Akkermans, Bogerd, Yücesan, & van Wassenhove, 2003; Davenport, 1998).

In the past decades, ERP systems' usage numbers have increased tremendously, and the worldwide ERP market summed 22.4 billion euros by 2013. The competition is fierce, and the top five companies

represent half of the market (SAP: 24%; Oracle: 12%; Sage: 6%; Infor: 6%, and Microsoft: 5%) (Pang, Dharmasthira, Eschinger, Brant, & Motoyoshi, 2013).

After first failures of enterprise resource planning (ERP) systems in mid-1990's, the IS research community became intrigued by the factors in such "productivity paradox" (Brynjolfsson, 1993). Making people adopt a new system was no easy process but is vital to the success of every organization (Basoglu, Daim, & Kerimoglu, 2007).

Various studies were developed to understand the main drivers that led users to adopt a certain ERP system (e.g., Bradley, 2008; Chien & Tsaur, 2007; Gorla, Somers, & Wong, 2010; Nwankpa & Roumani, 2014; Nwankpa, 2015; Pan & Jang, 2008; Rajan & Baral, 2015; Sternad & Bobek, 2013; Tsai, Lee, Shen, & Lin, 2012; Youngberg, Olsen, & Hauser, 2009). Although the conclusions were very significant, reviewed studies are usually centred on a specific model or framework and fail to explain the relations between ERP user's adoption and user's satisfaction.

Hence, through the review of scoped literature in the area, the state of the art about ERP Adoption and satisfaction is assessed. Founded on this review, a model proposal is built to have a structural body for validation. A survey is conducted to gather data, which is used as a base for model validation by the quantitative statistical method of PLS-SEM.

The research contributions are threefold. Firstly, this study explains the relationship between ERP adoption at an individual level and user satisfaction. Secondly, this research extends the ERP

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adoption model with the inclusion of three constructs: management support, training, and system quality. Thirdly this model explains 70% of ERP usage satisfaction.

## 2. Literature review

### 2.1. Enterprise resource planning (ERP)

Enterprise resource planning (ERP) systems are defined as “comprehensive, packaged software solutions that seek to integrate the complete range of a business’s processes and functions in order to present a holistic view of the business from a single information and IT architecture” (Klaus, Rosemann, & Gable, 2000, p. 141).

These systems assume a modular structure and provide information integration across every business area using a shared database (Davenport, 1998). ERPs started in the mid-1990s and were used to outline and organize business processes across all the organizational groups. This integrative approach guaranteed that tasks and processes were always performed in the same way in every place the organization is (McAfee, 2009).

Traditionally oriented for capital-intensive industries ERP systems achieved a maturity state of development. Tough in recent years, ERPs are being introduced to other sectors, such as retail, education, finance, insurance, healthcare and hotel chains (Shehab, Sharp, Supramaniam, & Spedding, 2004).

ERP is a multidisciplinary, and interdisciplinary field of study and the research community contribution is diverse and comprehensive (Moon, 2007). A study by (Esteves & Bohorquez, 2007) showed that the most investigated area is the implementation phase, in which success is by far the main topic. Although system usage and evolution are also addressed, other fields of study such as adoption still need more contributions.

The term ERP was coined in 1993 by the Gartner Group based in Stamford, CT. The company started to publish regular reports on the ERP technology where the inclusion criterion was the integration extent across the various functional modules (Jacobs & Weston, 2007).

Subsequently, research in ERP increased over the past years. To acquire a general idea of the evolution of published literature about ERP, main academic databases were scanned for the term “Enterprise Resource Planning” in the period 1990–2015. Fig. 1

summarizes the results of ERP bibliometric research (due to figures discrepancy, and to have an easier reading from the graphic, a factor of 0,1 was applied to Google Scholar search results).

These results reveal the growing interest in ERP over the past 25 years. The first relevant increase in the number of published work about ERP was in the year of 1997 with four times more hits than the previous year. Since then, the amount of work on ERP research has increased exponentially over the first decade of the 21st century with a considerable leap of 74% in 2000 (related to 1999) and an explicit growth of 346% at the end of the first decade (2009) when compared with 2000. Consistent with this growth, the numbers also show that ERP still is a prominent field in the research community, with about 6200 search results on average in the 2009–2014 period (Google, 2015).

### 2.2. Recent ERP empirical studies

As seen before, ERP research is vast and disperse. After a closer look at published literature, it is clear that the main focus has been the implementation phase success and system’s technical aspects, neglecting themes like ERP system adoption (Esteves & Bohorquez, 2007; Moon, 2007; Pairat & Jungthirapanich, 2005; Shehab et al., 2004). This paradigm seems quite confusing when research indicates that software selection and preparation is the critical part of the implementation project (Shaul & Tauber, 2013). Therefore, stakeholder’s adoption in ERP systems implementation can give a clearer insight on how to approach this early stages problematic (Hwang, 2005).

First, ERP adoption is mainly studied using several models and extensions mainly based on the contribution of psychology’s Theory of Planned Behaviour (TRA) (Fishbein & Ajzen, 1975) in IS technologies research (Wu & Chen, 2005). Although there are various models that explain user’s adoption, the Technology Acceptance Model (TAM) (Davis, 1986, 1989) is the most referenced in this area of research (Basoglu et al., 2007; Lee, Kozar, & Larsen, 2003; Venkatesh & Bala, 2008; Venkatesh, Thong, & Xu, 2012). Secondly, researchers working on ERP system’s success in most cases apply the DeLone & McLean (D&M) IS success model (DeLone, 1988) as the main tool to evaluate the system’s implementation success (Mardiana, Tjakraatmadja, & Aprianingsih, 2015). In this case, success is understood as net benefits for the individual and

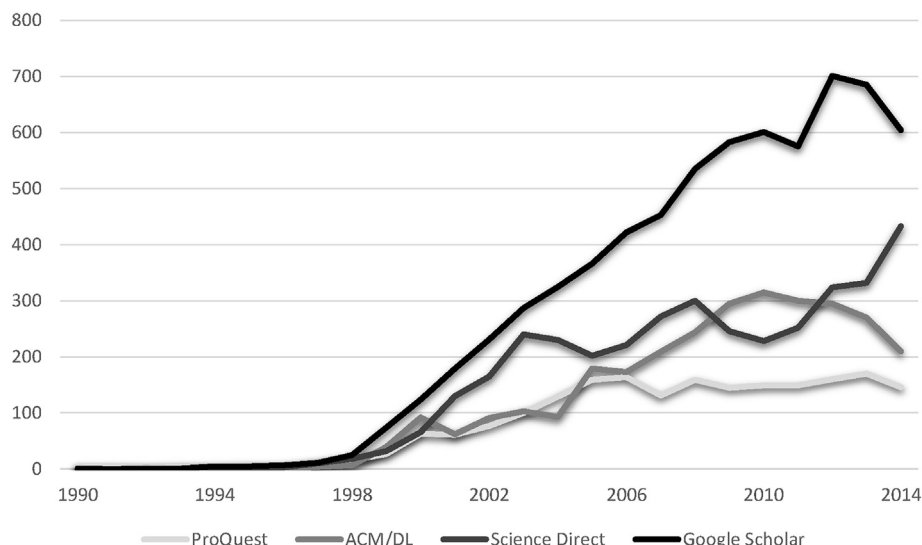


Fig. 1. Number of publications on “Enterprise Resource Planning” in major databases by year.

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