



# Measuring the Impact of an ERP Project at SMEs: A Framework and Empirical Investigation

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## ABSTRACT

*This article analyses and tests a novel framework for the evaluation of an ERP project. The framework incorporates specific performance measures, which are linked to a previously developed model, (the 'six-imperatives' framework) and are relevant to ERP implementation. Two case studies illustrate the use of the framework in two Greek companies aiming to measure, in practical terms, the impact of the ERP project on their operations. The main results indicate that the "six-imperatives" provide a comprehensive methodology based on the profound exploration and understanding of specific business processes and objectives that should be met in order to assess an ERP project. [Article copies are available for purchase from InfoSci-on-Demand.com]*

*Keywords: Action Research; EPP System Evaluation; Greece; Performance Measures; SMEs; Supply Chain*

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## INTRODUCTION

An Enterprise Resource Planning (ERP) system is an integrated enterprise information system to automate the flow of material, information, and financial resources among all functions within an enterprise on a common database. ERP systems are meant to replace the old systems usually referred to as 'legacy systems' in order to help organizations integrate their information

flow and business processes (Abdinnour-Helm et Al., 2003). ERP provides two major benefits that do not exist in non-integrated departmental systems: (1) a unified enterprise view of the business that encompasses all functions and departments; and (2) an enterprise database where all business transactions are entered, recorded, processed, monitored, and reported. This unified view increases the requirement for, and the extent of, interdepartmental cooperation and coordination. Moreover, it en-

ables companies to achieve their objectives of increased communication and responsiveness to all stakeholders (Dillon, 1999). This is the most important point raised when it comes to the ERP systems and integration of information flows and business processes as they can support information sharing along company value chain and help in the achievement of operating efficiency (Law & Ngai 2007).

After over a decade of applications, the implementation of ERP systems is still considered a complex project with many problems concerning budgets and expected benefits. Given the possibility for success and failures, it is reasonable to expect that organisations should be able to assess the implications of the ERP adoption on their overall performance. Until recently most ERP researchers and practitioners generally talk about ERP critical success factors (CSFs) and implementation models based on CSFs that address key implementation issues (Holland and Light, 1999; Motwani et al., 2005; Umble et al., 2003). Top management involvement, business plans, vision, vendor support, change readiness, teamwork, team composition, and communication were found to be critical factors to ensure a smooth introduction for successful ERP implementation (Ramayah et al., 2007). It seems that very few multi-disciplinary studies have been conducted in an attempt to conclude on the impact of ERP system on organisational performance. Moreover, the topic of assessing the benefits of ERP systems has not been fully addressed mainly because the justification process is a major concern for organisations investing in IT, and managers are unable to evaluate the holistic implications of adopting new technology, both in terms of benefits and costs (Gunasekaran et al., 2006). Questions like how do we define a successful ERP project have not yet been answered.

Motivated by the ERP benefits concept, in this article we suggest that ERP success is achieved when the organisation is able to better perform all its operations and when the integrated information system can support the performance increase of the company. This comprises of the benefits that the company has

reaped from the implementation of the ERP or the achievement of ERP objectives. This is often called benefits management (Willcocks, 1994) and is defined as ‘the process of organising and managing such that potential benefits arising from IT are actually realised’. According to Coleman and Jamieson (1994) benefits management encourages manager to focus on exactly how they will make the system pay off and contribute to the business objectives. Based on our recently developed methodology called the “*six-imperatives*” methodology (Argyropoulou et al., 2008a; 2008b) for ERP system evaluation, we measured the impact of the ERP implementation project on two Greek SMEs.

## ERP System Implementation and SMEs

Existing literature suggest that SMEs may be differentiated from larger enterprises by a number of key characteristics such as personalised management, severe resource limitations, flat and flexible structures etc. (Berry, 1998; Burns & Dewhurst, 1996; Huin, 2004; Marri et al., 1998). Another major characteristic of SMEs is the absence of proper and formal IS practices and skills. In the present era of globalisation, it is obvious that the survival of SMEs will be determined by their ability to understand and acknowledge the importance of IS and their accessibility to the right information at the right time (Sharma & Bhagwat, 2006). Thus far, ERP adoption has been attempted by larger organizations, thus consulting and implementation methodologies are specified for their operations. Following a study in 150 Italian SMEs, Morabito et al., (2005) concluded that the risks associated with investments in ERP software are many and resellers should be able to offer end-to-end business management solutions addressing specific requirements before and after implementation of the solution. According to Sun et al., (2005) few SMEs have the resources to adequately address every Critical Success Factor as they should and they are forced to make implementation compromises according to resource constraints, subsequently putting

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