Chapter 6

Analyzing Enterprise System Post-Implementation Use of Manufacturing Processes in Greek SMEs

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ABSTRACT

This exploratory study assesses the maturity of the use of manufacturing processes by Small and Medium-Sized Enterprises (SMEs) which run enterprise information systems (ESs). The chapter considers a reference set of manufacturing best practice processes and analyzes which of these processes are used and which are not on a sample of 15 Greek SMEs. It explores the causes of process non-use from the ES implementer’s perspective. The analysis shows that several production planning, scheduling, execution, and costing processes, which could in principle add value to the sample companies, are not used, even after 7 years on the average of ES operation. Most deficiencies can be attributed to the companies’ lack of process-specific knowledge. An implication is that the analysis of the use of detailed processes should be part of the process and ES maturity assessments, and should precede the evaluation of higher-level business process orientation metrics.

INTRODUCTION

This study explores the practices of Small and Medium-Sized Enterprises (SMEs) regarding the use of manufacturing business processes after the implementation of packaged enterprise information systems (ESs). It investigates in particular which business processes are used by SMEs and carried out with their ESs.

Several studies reported on which ES modules are adopted by companies (Spathis and Constantinides, 2003; Davenport et al., 2004; Spathis and Constantinides, 2004; Poulymenakou and Borotis, 2005; Spathis, 2006). ES modules, such

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as sales, purchasing, and production management, can be considered as “high-level” processes. However, there are not many thorough analyses of the adoption and use of detailed individual sub-processes of high-level processes, referred to in the following as “low-level” processes. The only low-level process use analyses known to the authors are those by Spathis and Constantinides’ (2004), and the authors’ previous work, namely Doukas and Mantakas (2007), and Mantakas and Doukas (2011a, 2011b, 2012). Spathis and Constantinides (2004) examined the role of ES in accounting practices change and reported low adoption rates of several accounting methods, models and processes after ES implementation on a sample of 26 Greek companies. Doukas and Mantakas (2007), Mantakas and Doukas (2011a, 2011b, 2012) examined the use of sales, purchasing, manufacturing, and product costing processes by Greek SMEs. The findings suggest that several processes which could in principle add value to the companies, are often not used, are not implemented according to best practice, or are carried out without the ES, either manually or with office automation software, even after several years of ES operation. In principle, the non-use of a best practice process and/or its non-implementation with the ES can be considered to be a deficiency.

The above issues are known by Greek practitioners but have not been extensively studied. The examination of which processes are used and ES implemented by a company is important because it can contribute to the assessment of process and ES use maturity. The present study addresses these issues, extending Mantakas and Doukas’ (2011) previous analysis. The study investigates the following research questions:

**RQ1:** After a successful ES implementation, which best practice business processes are/are not used by the companies?

**RQ2:** Are processes carried out with the ES?

**RQ3:** In the case where a process is not used or is not carried out with the ES, what are the causes of these deficiencies?

The relationship of these research questions to previous studies of process and ES use maturity assessment, and process use deficiencies is discussed in the following.

Several Business Process Orientation (BPO) models (Reijers, 2006; Škrinjar et al., 2008; Chen et al., 2009; Kohlbacher, 2010; Kumar et al., 2010; Trkman et al., 2010; Kohlbacher and Gruenwald, 2011), as well as Hammer’s (2007) process and enterprise maturity model and Lockamy and McCormack’s (2004) and Reyes and Giachetti’s (2010) supply chain maturity models, evaluated general aspects of process use. The studies evaluated subjectively metrics applied globally to all the processes of sample companies, or some high-level processes, such as supply chain management. However, these studies did not examine which low-level processes are or are not used by the sample companies. With respect to the ES role, Reijers’ (2006) and Kohlbacher’s (2010) BPO constructs cover the degree of process integration due to ES use; Hammer’s (2007) model includes the infrastructure enabler, which covers process-supporting information and management systems; and Reyes and Giachetti’s (2010) model includes the information systems and technology management view, which concerns the development, implementation, functioning, and evaluation of the process-supporting information systems. The role of ES is not referred to, at least explicitly, in Lockamy and McCormack’s (2004), Kohlbacher and Gruenwald’s (2011), and Škrinjar et al.’s (2008) BPO constructs, while it is considered separately from BPO in Kumar et al.’s (2010), and Trkman et al.’s (2010) studies. These studies did not examine which low-level processes are carried out using the ESs by the sample companies.

Shang and Seddon (2007) reported on ES post-implementation process use deficiencies due to inappropriate process changes during ES implementation by big companies. Pan et al. (2011) explored ERP post-implementation risks in a big company, based on Peng and Nunes’ (2009a, 2009b) ontology, and reported inaccuracies of sales forecasts, bill of materials, inventory
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