Chapter 3

Requirements Management for ERP Projects

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ABSTRACT

ERP software standardizes an enterprise’s business processes and data. The software converts transactional data into useful information and collates the data so that they can be analyzed. Requirements engineering is an important component of ERP projects. In this paper, we propose: (1) An ERP maturity model (EMM) for assessing the ERP maturity within the organization and (2) A Requirements Engineering Method (REM) for ERP system requirements to capture the requirements from the different types of users of an ERP system, verifying and validating them. The EMM consists of three levels and each level has a focus and a key process area. Key indicators of ERP functionality identified by a major ERP vendor have been used to apply the EMM to an enterprise. This identifies the level of the EMM to which an enterprise belongs. Then the REM is used to enable the enterprise to assess its ERP system requirements and refine it using a knowledge database to reach a higher level in the EMM than the present one. The authors deem that this model can benefit users across all the ERP projects.

INTRODUCTION

ERP is a packaged software solution that addresses the enterprise needs taking the process view of an organization to meet the organizational goals tightly integrating all functions of an enterprise. It is a set of application software that integrates manufacturing, finance, sales, distribution, HR and other business functions with a single comprehensive database that collects data from and feeds data into modular applications supporting all the company’s business activities, across these functions, across business units, across the world.

Enterprise systems are complex and expensive and create dramatic organizational change. Learning from high performance projects is crucial for software process improvement. Last, but not least, by determining the crucial factors of a successful
ERP system, we create incentives that likely will yield higher performance. Weinberg (Weinberg, 1971) demonstrated many years ago that the proverb “You get what you measure” also is highly valid in the software engineering field. ERP projects are a subclass of software projects (Erik Stensrud et al., 2003). According to a report by Advanced Manufacturing Research (AMR) (www.amrresearch.com), we find that the entire enterprise applications market which includes Knowledge Management (KM), Customer Relationship Management (CRM) and Supply Chain Management (SCM) software will top $70 billion by 2007. Many researchers and practitioners have suggested that it is easier and less costly to mold business processes to ERP systems rather than vice versa (Davenport, 1998; Holland & Light, 1999). A high failure rate in implementing ERP systems has been widely cited in the literature (Davenport, 1998), but research on critical success factors in ERP implementation is rare and fragmented.

To date, little has been done to theorize the important factors for initial and ongoing ERP implementation success (Brown et al., 1999). Enterprise Resource Planning (ERP) systems (Fiona Fui-Hoom et al., 2001) have emerged as the core of successful information management and the enterprise backbone of organizations. ERP implementation is a lengthy and complex process and there have been many cases of unsuccessful implementations which have had major impacts on business performance (Parr & Shanks, 2000). Also ERP applications require the capability to link all internal transactions (Hiquet, 1998). Though the ERP implementation and its critical issues, success factors and implementation problems have been identified (Markus et al., 2000), but no empirical studies and no explicit proposition are evaluated so far.

One study of mid-size to large companies conducted by AMR research found that 67% of these companies are implementing some form of ERP, while another 21% are evaluating potential ERP systems solutions. As a growing number of companies adopt ERP systems, the performance of ERP systems is identified as one of the top five IT priorities among global CIOs according to independent surveys conducted by the Morgan Stanley (Togur et al., 2003) and Deloitte & Touche/IDG Research Services Group (Deloitte Touche, 2002).

In this paper, we propose: (1) An ERP maturity model (EMM) for assessing the ERP maturity within the organization and (2) A Requirements Engineering (RE) method for ERP system requirements (ERPRE) to capture the requirements from the different types of users of an ERP system, verifying and validating them. The EMM consists of three levels and each level has a focus and key process area. Key indicators of ERP functionality identified by a major ERP vendor have been used to apply the EMM to an enterprise. This identifies the level of the EMM to which an enterprise belongs. Then the ERPRE is used to enable the enterprise to assess its ERP system requirements and refine them using a knowledge database to reach a higher level in the EMM than the present one. The EMM and ERPRE proposed in this paper have been validated and the upshot of the study is that the proposed method to handle requirements engineering and an exclusive ERP maturity model for ERP projects is set to enhance the performance of the ERP projects.

**LITERATURE REVIEW**

Requirements engineering comprises those processes by which a client’s requirements are analyzed and then transformed into precise specifications. The final specifications include functions, interfaces, performance and constraints. Often the requirements analysis activity utilizes data flow diagrams (DFD) and data dictionary (DD), while the final requirements are specified using the natural language and formal notation. One standard for organizing the requirements specification is the IEEE/ANSI 830-84 standards.
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