Evaluating ERP Implementation Choices Using AHP

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ABSTRACT

An enterprise resource planning (ERP) system is an integrated software solution, typically offered by a vendor as a package that supports the seamless integration of all the information flowing through a company. Business information systems is an area of the greatest significance in any business enterprise today. ERP projects are a growing segment of this vital area. The objective of customization in ERP implementation is to achieve a fit between the ERP system and the process that the system supports. Widespread literature review has been done to study the issues in ERP implementation. Customization is found to be the major annoyance in most of the ERP projects. Literature review also shows that the AHP is the preeminent slant among the various methodologies applied to ERP projects in the past for prioritizing the attributes. Hence, in this paper we have applied the analytical hierarchy process (AHP) to a framework for evaluating ERP implementation choices. The upshot of the study is the identification of various customization possibilities for ERP implementation. This study is meant to help managers think about the various feasible customization options available to them. The application of AHP to the framework is exemplified and the epitome of findings is discussed. Future research work that can be done in customization is also indicated.

Keywords: analytical hierarchy process (AHP); customization, business process; enterprise resource planning (ERP)

INTRODUCTION

Enterprise systems are complex and expensive and create dramatic organizational changes. Enterprise resource planning (ERP) systems have the Herculean task of seamlessly supporting and integrating a full range of business processes, uniting functional islands and making their data visible across the organization in real time (Strong & Volkoff, 2004). ERP software is one of the fastest growing segments of business computing today.

According to the Advanced Manufacturing Research Report from www.amresearch.com, the ERP software market is expected to reach $31 billion in 2006 and the entire enterprise applications market, which includes customer relationship management (CRM) and supply chain management (SCM) software, will reach $70 billion. ERP systems are now considered the standard technology on which many organizations operate their business. The escalating expense of information systems and
their growing importance to organizations have made the justification of projects increasingly critical (Murphy & Simon, 2002).

The success of an ERP system is assured when there is a perfect fit between the ERP system and the organizational processes it supports (Holland & Light, 1999; Robey, Ross, & Boudreau, 2002). The significance of ERP systems is that they are packaged software solutions rather than customized systems. The ERP systems come to the customers as a pack with all the required business processes. In traditional information systems development, the software is designed and developed to fit the organization.

But in ERP systems, the organization is required to fit the ERP system to reap the full benefit of this packaged software solution. It has been identified that it is easier and less costly to mold business processes to ERP systems rather than vice versa (Davenport, 1998; Holland, Light, & Gibson, 1999). A key issue in ERP implementation is finding a match between the organization’s business processes and the ERP system by appropriately customizing both the system and the organization.

One has to be very careful during the process of customization as over-customization will result in a system with reduced flavour of an integrated system and will fail miserably to reap the full benefits of a packaged software solution. ERP vendors deploy technical consultants and functional consultants for carrying out this hectic process. The objective of customization in ERP implementation is to achieve a fit between the ERP system and the process that the system supports.

In this article, we use a framework proposed by Luo and Strong (2004) for evaluating ERP implementation choices. This framework does not determine decisions for management; rather it provides the possibilities for customization and indicates the level of technical and organizational change needed to implement each possible customization option. Hence, in this study, we apply the analytical hierarchy process (AHP) to this framework for evaluating ERP implementation choices to enable management decision-making on customization choices.

The outcome of the study is the identification of various customization possibilities for the business processes as well as ERP systems, and it is expected to determine decisions available for managers. This study is meant to help managers think about the various feasible customization options available to them. The application of the AHP to the framework is illustrated with the data collected from an organization preparing for ERP implementation. A future research study could validate this framework along with the AHP in multiple organizations varying in size and business processes and suggest suitable measures for customization during ERP implementation.

**LITERATURE REVIEW**

ERP emerged in the late 1980s as a derivative of material requirement planning (MRP) systems that convert master production plans into detailed requirement schedules of raw materials and components (Grant & Tu, 2005). Among the research axes that are now active in ERP, it is noticed that there is a growing interest in the customization of ERP systems (Botta-Genoulaz et al., 2005). Enterprise resource planning (ERP) is a constantly changing and evolving concept (Klaus, Rosemann, & Gable, 2000). The latest generation of ERP systems extends beyond the organization by capturing inter-organizational processes such as customer and vendor relationship management (Kumar & Hillegersberg, 2000).

ERP systems have gradually been designed, developed, and improved by ERP vendors in response to new technologies and emerging business requirements (Mabert, Soni, & Venkataramanan, 2003). Ease of customization is judged to be an important criterion, while ease of implementation and vendor reputation was not found to be significant (Keil & Tiwana, 2006). Functionality and reliability of packaged software depend solely on the degree of customization.

Several studies have demonstrated that the implementation of ERP systems requires
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