

Understanding ERP system adoption from the user's perspective

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Abstract

An enterprise resource planning (ERP) system is a new management technology that advocates an integrated approach to conduct business. While organizations are hoping to apply this technology to improve overall performance, they must understand what it takes for their employees to use it. Although the use of ERP systems may not be voluntary, the understanding of system adoption from the user's perspective is useful in helping the organizations prepare their employees to face new challenges and learn how to make good use of the technology. To analyze factors affecting the ERP system usage, we proposed a conceptual model derived from the Triandis framework. The use of the Triandis framework is based on the previous research that documents the importance of social factors on the adoption of a technology. An empirical study was conducted in Hong Kong to understand the adoption process. Our research results show that social factors are the most significant determinant affecting the ERP system usage. Other factors such as compatibility and near-term consequences are also significant. Based on our findings, we also propose some important managerial implications in connection to promoting the usage.

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1. Introduction

It has been well recognized in the management literature that it takes all business units or departments of an organization to work together to achieve its overall objectives and goals. This integrated view of management requires that each unit not only function efficiently and effectively within, but also understand how its activities and

decisions affect the functions of other units. On the other hand, information systems have been developed in an ad-hoc manner focusing on their corresponding business units. This creates islands of information in the organization making information sharing difficult. To support an integrated management approach, enterprise resource planning (ERP) has been proposed as a solution (Shanmugam et al., 2000).

ERP emphasizes resource planning from an enterprise's perspective. ERP systems implement ERP concepts enterprise wide and cover all business functions. Many benefits have been realized from

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the use of ERP systems. The advantages include better information sharing within the organization, improved planning and decision quality, smoother coordination between business units resulting in higher efficiency, and quicker response time to customer demands and inquiries. Building on top of these advantages, organizations may promote customer relationship management that would strengthen customer loyalty and satisfaction, and achieve larger market share.

ERP systems, similar to other management information systems, are often perceived as very complex and difficult to be implemented (Liang et al., 2007; Xue et al., 2005). For many organizations, ERP systems are the largest systems they have worked with in terms of the financial resource invested, the number of people involved and the scale of implementation. Several recent cases of ERP system implementation have experienced considerable difficulties (Goldberg, 2000; Krasner, 2000; Wah, 2000; Xue et al., 2005). The failure rate of ERP implementation is very high (Yeh et al., 2007). Among other obstacles, technical problems and people obstacles have been cited as the major barriers (Botta-Genoulaz and Millet, 2006; Krasner, 2000). To further understand the ERP adoption process, this research attempts to identify key factors that determine the ERP system usage using a well-established theoretical framework, the Triandis model.

In the next section, we provide a brief description of ERP function and characteristics and then we discuss our research model based on the Triandis framework in Section 3. The methodology of the study is described in Section 4, followed by the results of our analysis in Section 5. Discussions of findings, implications and conclusions are presented in Sections 6, 7 and 8, respectively.

2. ERP functions and characteristics

The integration of business functions through ERP is achieved through a uniform software platform and database. It is evolved from Material Requirement Planning (MRP) systems and Manufacturing Resource Planning (MRPII) systems. MRP systems are concerned with the integration of manufacturing functions involving purchasing, planning, materials and operations, whilst MRPII systems ensure the coordination and interactions of manufacturing with other functional areas such as marketing, finance and engineering.

Although ERP systems have the foundation originally developed for a manufacturing setting, they have evolved into a platform to support almost all aspects of business and industrial operations. Typical ERP systems provide many modules. Some have more advanced and powerful modules than the other. A typical ERP system may consist of these modules: Accounting and Financial Module; Human Resources Management Module; Manufacturing Module; Procurement Management Module; and Distribution and Supply Chain Module.

Unlike most home-growth legacy systems that were designed to fit individual working convention, ERP systems provide best practices, in other words generic processes and functions at their outset. Alignment of the standard ERP processes with the company's business process has been considered as an important step in the ERP implementation process (Botta-Genoulaz et al., 2005). Implementing a packaged ERP system inevitably changes the way people work. Compatibility between the new system and the existing business procedures and data format are the major issues reported by the companies (Lucas et al., 1988; Soh et al., 2000; Van Everdingen, 2000). The mismatches created considerable adoption problems (Kumar, 2000). Therefore, we believe the compatibility of these systems with the existing business working conventions is an important factor explaining the usage.

As an enterprise system, the success of ERP implementation requires a close cross-functional cooperation (Motwani et al., 2005). The information entered by one division will be used by other divisions, even in real time. Thus, employees may be expected by their peers to use the ERP in order to make the ERP more useful. Since ERP is a major investment of a firm and the implementation may involve substantial organizational changes, top management support has been found to be a key factors of success, but more importantly top management need to develop a shared vision and to communicate it to the employees so that the expectation is clear (Ehie and Madsen, 2005; Motwani et al., 2005; Tchokogué et al., 2005). Thus, the expectation of both peers and top management may influence the behavior of the ERP users. This social factor has been dropped from the original Technology Acceptance Model (TAM), a popular framework for study of technology adoption, because the technology investigated, a word processor, was of personal and individual

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