Chapter 93
An Empirical Study of Technological Factors Affecting Cloud Enterprise Resource Planning Systems Adoption

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ABSTRACT

The adoption of cloud enterprise resource planning (CERP) systems deserves serious attention from both the practitioner and academic communities. This study empirically investigated the relationships for organizations that adopted CERP systems and for average organizations which are interested in CERP system adoption based on three technological and one benefit factors: The study identified the relevant technological factors as relative advantage, compatibility and security concern over the system adoption. This study indicated that the three technological and one perceived benefit factors are significant predictors of CERP systems adoption. The findings of the study provide evidence that organizations with CERP systems have a higher level of the three technological factors and perceived benefits than the mean of each relevant factor for all organizations that are merely interested in adopting the systems. The study discusses practical and theoretical implications of the results, and provides a guide for CERP systems adoption and a basis for further research.

INTRODUCTION

Increasingly, organizations are considering adopting cloud enterprise resource planning (CERP) systems instead of implementing traditional ERP systems. Enterprise resource planning (ERP) systems are capable of creating operational efficiency, and improved planning and decision making through business process and data integration (Nwankpa, 2015; Seddon Calvert, & Yang, 2010; Trinh-Phuong, Molla, &

Peszynski, 2012; Vemuri & Palvia, 2006). In this study, the term "traditional ERP systems" refers to ERP systems that are hosted on servers located within an organization's premises, and accessed through the organization's information technology (IT) infrastructure. Over the years, ERP systems have continually evolved in part due to changing business requirements and technological advancement. As a result, the scope of ERP systems has broadened to offer more business solutions. In the current evolution, advances in cloud computing technology have resulted in the development of CERP systems (Boillat & legner, 2013; Chauhan & Jaiswal, 2015; Saeed, Juell-Skielse, & Uppström, 2011; Popli & Sarin, 2015). The National Institute of Standards and Technology (NIST-USA, 2014) has defined cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011, p. 6). A CERP system is an ERP system offered through the cloud architecture (Boillat & Legner, 2013; Chauhan & Jaiswal, 2015; Saeed, Juell-Skielse, & Uppström, 2011). CERP vendors host and maintain ERP systems within their own cloud servers, and offer the software and other IT resources to organizations for a fee.

Recognizable differences between traditional ERP systems and CERP systems can be categorized as economical (e.g. cost), technical (e.g., connection) and operational (e.g. maintenance) (Link & Back, 2015; Fan, Wu, Chen & Fang, 2015; Peng, Chao & Gala, 2014). Organizations spend a considerable amount of resources to acquire an IT infrastructure that may be required in order to successfully implement the traditional ERP systems. However, organizations may require significantly less resources while adopting CERP systems. For this reason, the adoption of CERP systems can be an effective alternative to traditional ERP systems adoption which requires organizations to purchase, implement and maintain the acquired systems within company premises. As the management of the ERP systems and services has moved to the service providers, the CERP systems can facilitate fast execution, seamless update and rapid reconfiguration for their customer's IT needs (Chaudhary, Hyde & Rodger, 2015; Gutierrez, Boukrami & Lumsden, 2015). In addition, the technology adoption may lead to technological changes and innovation for the organizations (Link & Back, 2015; Rogers, 2003).

Most organizations adopting CERP systems may be attracted to the characteristics of cloud computing, which include on-demand service where they can flexibly configure vendor's ERP systems to suit their current needs (Link & Back, 2015; Mell & Grance, 2011). Cloud computing also offers universal accessibility through the Internet using different platforms, and allows resource pooling and measured service as a pay-per-use model. The benefits of the accessibility, cost saving, flexibility and scalability with cloud computing over traditional ERP systems have often been emphasized by CERP systems vendors (Boillat & Legner, 2013; Chauhan & Jaiswal, 2015; Link & Back, 2015; Peng & Gala, 2014). It has also been noted that new types of partnerships have emerged between the vendors and customers of CERP systems (Boillat & Legner, 2013; Peng, Chao & Gala, 2014). Organizations that adopt CERP systems closely collaborate with their vendors in order to conduct businesses, and commonly become locked in to the same vendors. This "vendor lock-in" can be a potential risk for organizations, especially if they encounter significant data volume and application compatibility issues. In such situations, organizations may have to pay high switching costs in order change vendors. Therefore, the selection of a CERP vendor needs to be carefully performed based on established evaluation criteria such as vendor's software functionality, support, charged fees, and general track record (Boillat & Legner, 2013: Gutierrez, Boukrami & Lumsden, 2015). During the vendor selection process the customer organizations should match the technological context of the CERP systems to their requirements, and balance their current

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