Factors Affecting Individual Level ERP Assimilation in a Social Network Perspective: A Multi-Case Study

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ABSTRACT

Prior research on ERP assimilation has primarily focused on influential factors at the organizational level. In this study, the authors attempt to extend their understanding of individual level ERP assimilation from the perspective of social network theory. They designed a multi-case study to explore the relations between ERP users’ social networks and their levels of ERP assimilation based on the three dimensions of the social networks. The authors gathered data through interviews with 26 ERP users at different levels in five companies. Qualitative analysis was used to understand the effects of social networks and interactive learning. They found that users’ social networks play a significant role in individual level ERP assimilation through interactive learning among users. They also found five key factors that facilitate users’ assimilation of ERP knowledge: homophily (age, position and rank), tie content (instrumental and expressive ties), tie strength, external ties, and centrality.

KEYWORDS

Enterprise Resource Planning (ERP), Individual Level ERP Assimilation, Interactive Learning, Social Network

1. INTRODUCTION

In order to survive and thrive in the increasingly uncertain, dynamic and fierce marketplace, many firms embrace enterprise resource planning (ERP) systems to improve operational efficiency, support business development and enhance competitive advantage (Ruivo, Oliveira, Johansson, & Neto, 2013). According to a recent report authored by Gartner, during 2013 the worldwide ERP market was $25.4 billion, experienced slow growth of 3.8% over 2012. ERP is a set of commercial software modules linked to a centralized database for enabling the integration of all departments and functions throughout a company (S.-I. Chang & Gable, 2002; Ng, 2013). A typical lifecycle of ERP systems is generally divided into three phases: ERP adoption, ERP implementation and ERP assimilation (Swanson & Ramiller, 2004; Wu & Chuang, 2010). As integration software that includes various functional areas such as accounting, sales, human resource, inventory management etc. (Davenport, 1998), ERP is excessively complex. Consequently, companies often encounter significant difficulties...
in assimilating the embedded knowledge and stimulating employees to use the systems in desired ways (Fichman & Kemerer, 1999; Jasperson, Carter, & Zmud, 2005; Purvis, Sambamurthy, & Zmud, 2001), which often result in ERP failures, lead companies to financial difficulties (Markus & Tanis, 2000; Robey, Ross, & Boudreau, 2002).

With the expectation to explore the reasons for ERP failures and improve the chances of ERP success, many IS scholars dedicated substantial efforts to identify factors that lead to the adoption, implementation, assimilation, and success of ERP systems (e.g. Chang & Gable, 2002; Chang, Hung, Yen, & Lee, 2010; Fichman, 2004; Gattiker & Goodhue, 2005; Ke & Wei, 2006; Liang, Saraf, Hu, & Xue, 2007; Ng, 2013; Ruivo et al., 2013; Sharma, Daniel, & Gray, 2012; Shiang-Yen, Idrus, & Wong, 2012). One stream of aforementioned ERP research has focused on ERP assimilation that is seen as an important indicator of ERP success (e.g. Chang, Kettinger, & Zhang, 2009; Liang et al., 2007; Liu, Feng, Hu, & Huang, 2011; Min, Chou, & Chang, 2011; Saraf, Liang, Xue, & Hu, 2013; Wang, 2008). However, the prevailing literature on ERP assimilation give little attention to the role of individual users (Liu et al., 2011). As the end-user of ERP systems, “the degree of cognitive understanding of ERP technology and the extent to which the technology is used beyond routine tasks by an individual user” (a.k.a. individual level ERP assimilation) play an important role in realizing the anticipate benefits from ERP systems (Liu et al., 2011). And as a critical factor for ERP success, individual level ERP assimilation determines whether ERP systems can effectively interact with end users and achieve success or not. Thus, it’s vitally important to explore factors affecting individual level ERP assimilation.

During the long assimilation phase of ERP lifecycle, compared with formal ways like training and IT help desk, end-users mostly assimilate ERP through informal ways to learn ERP by consulting to peers, interacting with each other in practical work within the organizational boundary (Boudreau & Robey, 2005; Robey et al., 2002). End-users frequently relied on each other for assistance; if a user within a department discovered how to perform a particularly useful task, peers were quickly updated about the tip (Boudreau & Robey, 2005). Therefore, in this study, focusing on end-users’ interactive learning when using ERP systems, we argue that end-users’ ERP assimilation is through an interactive and improvised learning process. Then what we are interested in is how users’ ERP learning actions happen. According to social network theory, uses’ learning actions are not isolate, but embedded in networks formed by users (M. Granovetter, 1985). And there is a growing interest in examining how the social networks impact their behaviours towards IT (e.g. Bruque, Moyano, & Eisenberg, 2008; Montazemi, Siam, & Esfahanipour, 2008; Sasidharan, Santhanam, Brass, & Sambamurthy, 2012; Tracy Ann Sykes, Viswanath Venkatesh, & Sanjay Gosain, 2009; Sykes, Venkatesh, & Johnson, 2014; Zhang & Venkatesh, 2013). Thus, we argue that user’s ERP learning happens in the social networks, and propose that user’s ERP learning will be depend on the characteristics of the social networks. Users are embedded in networks of different relationships that impact their ability to diffuse complex technology necessary for higher individual level ERP assimilation.

In extant literature, to our knowledge, no studies have focused on understanding the relationships among social networks, interactive learning and individual level ERP assimilation. Motivated by the research gap, this study seeks to improve the understanding of ERP assimilation in a social network perspective by inquiring:

**RQ1:** What are the factors affecting individual level ERP assimilation in social networks?

**RQ2:** How and why do these factors affect individual level ERP assimilation?

Given the sparse literature on the relationship between social networks and individual level ERP assimilation, we conducted an exploratory multi-case study, visited five companies, and interviewed 26 individuals ranging from frontline ERP users to CIOs by following the case study protocols and guidelines as specified in Yin (2003) and Paré (2004).