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Knowledge Dynamics and Domain Expertise in Enterprise Information Systems Implementation: An Introductory Study

Sharath Sasidharan
Emporia State University, ssasidha@emporia.edu

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Emporia State University
ssasidha@emporia.edu

ABSTRACT

Enterprise Information Systems (EIS) have become the core information processing architecture of large businesses. This study examines the role of Knowledge Social Networks (KSN) in facilitating EIS-related knowledge acquisition accounting for the domain expertise of knowledge sources, its interplay with user task complexity, and their impact on EIS implementation. While research on KSNs has considered knowledge relationship ties, both for knowledge acquisition and dissemination, and their impact on knowledge outcomes and employee performance, it has not addressed the domain expertise of knowledge sources within KSNs and the quality of resultant knowledge flows. Data for the study was collected six months after the implementation of an Enterprise Resource Planning system. Preliminary results indicate that while knowledge acquisition through KSNs is important, the task complexity of users and domain expertise of knowledge sources need to be considered, especially for users dealing with complex business problems.

Keywords

Enterprise information systems, social networks, enterprise resource planning

INTRODUCTION

Enterprise Information Systems integrate information across departments and functional units by implementing an overarching software program with a single unified database that caters to the entire organization. As the use of EISs spans different functional units across an organization and impacts many core business processes, its implementation is complex and challenging, requiring considerable knowledge transfer, information sharing, and coordination among users (Cotteleer and Bendoly, 2006; Jacobs and Bendoly, 2003; Remus, 2012). While training programs are helpful, they cannot provide users with knowledge support sufficient to adapt the new system to work and moreover, complex technologies do not usually operate as planned (Kang and Santhanam 2003; Sharma and Yetton, 2007). Drawing upon the social network (SN) perspective (Brass, 1995), this study examines the process of knowledge acquisition from within the social context in which the EIS is implemented.

The SN approach considers individual employees within an organization as being entrenched in a mesh of relationship ties, the structure and features of which shape their motivations, determine their preferences, and drive their actions. Prior research has examined relationship ties pertaining to friendship, hostility, workflow, advice, and knowledge (see Phelps, Heidl and Wadhwa, 2012 for a review). KSNs consider knowledge relationship ties, both for knowledge acquisition and dissemination, and their impact on knowledge outcomes and employee performance.

EIS IMPLEMENTATION AND KNOWLEDGE ACQUISITION

The post implementation period of an EIS consists of extensive interactions and knowledge exchanges among users as they adapt to the system and modify existing business practices and procedures (Fichman and Kemerer, 1997; Pawlowski and Robey, 2004; Remus, 2012). User relationships with other users influence their interactions and knowledge seeking behaviors (Borgatti and Cross, 2003). The KSN structure within the organization becomes critical in facilitating these knowledge exchanges. KSNs are developed based on tie characteristics - its presence or absence, frequency, longevity, direction, reciprocity, and multiplexity (Brass, 1995, p 44). Irrespective of the approach, the most important ties are the ones constituting the immediate network in which the individual is anchored, the ego network. Individuals with large ego networks are considered central to the SN, and possess power and influence within the organization as they have access to and control valued knowledge resources (Brass, 1995; Brass and Krackhardt, 2012; Phelps et al., 2012). Central individuals within a KSN may have access to a wider range of knowledge flows, however, if the individuals from whom the knowledge is sourced

do not have domain expertise, it can result in inferior knowledge flows, and may not translate into desirable knowledge outcomes, particularly for users performing complex tasks. As knowledge sources within an organization can range from the novice to the expert, their expertise level need to be taken into account, especially in the context of technology intensive domains such as EIS. While an elaborate KSN provides for extensive EIS related knowledge acquisition, knowledge sourced from those with relevant domain expertise can be expected to be of greater benefit to that sourced from those lacking such expertise.

EXPERIMENTAL PROCEDURES

Data for the study was collected six months after the implementation of an ERP system at a major public university in the United States. ERP systems are the most popular and widely used EIS in business and academia (Anderson, 2011). The software implemented (SAP R/3 Higher Education and Research) was tailored to meet the needs of a comprehensive higher education institution. The ERP implementation team consisted of vendor-provided experts, technology personnel from the university, and managers from organizational units across campus. ERP system users would belong to an organizational unit involved in a well-defined functional activity (e.g. payroll, contracting, student services, student billing, recruitment, athletics etc.).

PRELIMINARY RESULTS

Preliminary results indicate that while the KSNs played an important role in influencing implementation success, the consideration of domain expertise of knowledge sources while evaluating knowledge ties accounted for significant variation in implementation success. Those users well-entrenched in their network with extensive knowledge acquisition ties were able to leverage ERP system related knowledge flows and integrate system functionalities into work routines and business processes. However, the domain expertise of knowledge sources played a differentiating role, with knowledge sourced from those with domain expertise resulting in better knowledge outcomes than knowledge sourced from those lacking such expertise. While the extent of knowledge acquisition is important, accounting for the domain expertise of knowledge sources facilitated a more refined understanding of the knowledge dynamics at play within the network.

In addition, those users performing complex tasks benefited more from having access to knowledge sources with domain expertise. The nature of their tasks required them to optimally utilize the unique and innovative features of the ERP system and this was facilitated by their access to high quality knowledge flows. While the existence of extensive knowledge acquisition ties contributed to implementation success, it did not necessarily guarantee acquisition of knowledge with quality sufficient in tackling the demanding requirements of tackling complex business problems.

CONCLUSION

There is initial support for the contention that domain expertise of knowledge sources and its sufficiency in meeting user task complexity need to be taken into account while addressing the role of KSNs in influencing EIS implementation.

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