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Enterprise System Implementation: A Multimodal Approach to Social Network Knowledge Transfer

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Abstract

Organizations have struggled to provide adequate system-related knowledge support to end users during enterprise system implementation. Prior research has examined the influence of system-related knowledge sourced from end users within workplace social networks on implementation outcomes. Drawing upon the actor-network theory, this study extends the social network to include knowledge sourced from three institutionally mandated entities, the shared inbox, help desk, and service desk. This multimodal approach provides a comprehensive view of knowledge flows across the organization as opposed to a partial view confined to end user interactions. In addition, knowledge sourced from institutionally mandated entities will be of higher quality than that acquired through informal end user interactions, and can have a significant impact on implementation outcomes. This paper conceptualizes the shared inbox, help desk, and service desk as nodes within the network. Preliminary analysis is now being conducted on data collected from end users in the post-implementation phase of an Enterprise Resource Planning (ERP) system. The results of this study could provide additional insights into the impact of knowledge acquired from end users in comparison to knowledge sourced from support structures. Organizations could strategically allocate resources among support structures depending on its relevance to their operational context.

Keywords: Social Networks, Enterprise Resource Planning, Knowledge Transfer, Shared Inbox, Help Desk, Service Desk.

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1. Introduction

Enterprise systems enable decision-makers to take a data-driven, cross-organizational, integrated perspective that can help streamline operational processes and lead to improved financial performance (Aremu et al., 2020; Ranjan et al., 2016). The challenges in implementing enterprise systems and obtaining the desired benefits come from various sources including end-user resistance to change, ignorance of system features, a lack of awareness of underlying business processes, and difficulty in motivating the end-users to use the system in the desired way and at the desired level (Aremu et al., 2020; Chadhar & Daneshgar, 2018; Ranjan et al., 2016). Knowledge support in the form of training, end-user involvement throughout the implementation, and the use of experts and technology champions within organizational departments have been used to counter these challenges (Arasanmi, 2019; Bhattacharya et al., 2019; Ma'arif & Satar, 2018; Ranjan et al., 2016). These formal methods of knowledge dissemination provide generalized and basic procedural information, but do not provide the information inside the business context of every end-user to help them with their work-specific tasks (Sharma & Yetton, 2007). Hence, end users turn to their social networks to obtain real-time, work- and task-specific knowledge (Freeze et al., 2012; Sasidharan et al., 2012; Sasidharan et al., 2017; Sykes et al., 2009; Sykes et al., 2014).

2. Social Networks and Enterprise System Implementation

Social networks refer to informal person-to-person exchanges that occur naturally (Hanneman & Riddle, 2005). It can happen both in the personal and professional/work domains. In the case of the latter, social networks may develop around a mutual need for work guidance, knowledge support for task execution, and even emotional support (Brass 1984, 1985, 2011). Prior research on system-related knowledge acquisition through social networks during enterprise system implementation have found that the real-time, on-the-job knowledge acquired from co-workers serve to improve job and task performance. They also enhance implicit learning and provides end users with greater confidence in their ability to utilize the system in a more effective and efficient manner (Freeze et al., 2012; Sasidharan et al., 2012; Sasidharan et al., 2017; Sykes et al., 2009; Sykes et al., 2014).

Existing research has focused on the structural features of social networks and the positional characteristics of end users within the network in impacting their knowledge acquisition potential. In general, end users who are central to the network have been found to be better positioned to access and disseminate system-related knowledge across the network. Their control over valuable knowledge flows confers on them prestige, power, and authority across the network (Freeze et al., 2012; Sasidharan et al., 2012; Sasidharan et al., 2017; Sykes et al., 2009; Sykes et al., 2014).

3. The Actor-Network Theory

The actor-network theory argues that a social network is not about people alone, but should encompass all actors, including inanimate objects, such as software and hardware (Callon, 1999; Latour, 1987). This heterogeneous approach is rooted in the belief that social order in the network is the product of all actors, and focusing on a subset of these actors alone would

give only a partial view of the social order within the network. All actors are equally important to the network as they contribute to the social order in their own ways.

In the context of system-related knowledge dissemination through social networks, prior research has focused on one type of actor alone – the end user. However, in reality, organizations provide formalized knowledge support structures that can serve as sources of authentic system related knowledge. This can include the shared inbox, help desk, and service desk (Andrews et al., 2016; Koch & Mitteregger, 2016; Rahman, 2016). Apart from turning to their co-workers for on-the-job system-related knowledge, end users may acquire knowledge from these institutionally mandated support structures. Excluding them from the purview of social network knowledge research may reflect only a partial "social order" of the actors at play during enterprise system implementation. Hence, we extend this limited perspective of social networks to include the knowledge support structures of shared inbox, help desk, and service desk as knowledge nodes within the network, creating a multimodal social network.

4. A Multimodal Social Network

We now discuss the features and purpose of three institutionally mandated support structures: the shared inbox, the help desk, and the service desk.

4.1 Shared Inbox

A shared inbox is a common mailbox used by multiple users to send and receive emails (Babinchak, 2017; Konrad, 2020) It can be very effective in sharing a common workload amongst multiple individuals (such as for handling user complaints). In the context of an enterprise implementation, a shared inbox allows users to disseminate their system-related experiences and advice to other end users across the organization. They could post systems-related incidents which could then be addressed by others who might have faced similar issues and may be able to suggest effective fixes. Over time, it can develop into a database of end user driven fixes and hands-on problem resolution strategies.

4.2 Help Desk

The helpdesk is a tactical knowledge support entity, with primary focus on fast and efficient resolution of technical issues and incidents faced by the end user (Andrews et al., 2016; Magowan, 2019; Smith, 2019). The goal here is to get end users back to work in as short a time as possible. Typically, a help desk will keep track of problems and incidents faced by end users, ensure that no issues are ignored, and enables a real-time "big picture" view of the technical configuration of the system. Other features of help desks include being a single point of contact for technology support, ticket management, transferring incident ownership to external units in case of escalation, and handling hardware/software configurations (Magowan, 2019; Smith, 2019). The help desk would be a component of the overall service infrastructure of the organization and may feed into some service desk operations.

4.3 Service Desk

As opposed to the tactical orientation of the helpdesk, the service desk is strategic in nature – focusing primarily on the business needs of the organization as a whole, and not on the end user per se (Magowan, 2019; Rahman, 2016; Smith, 2019). The objective here is to design, manage, and support technology-driven business processes both within and across organizational units. It is their responsibility to align technology processes with organizational priorities. They are critical to managing the complex technology infrastructure of more mature organizations, where there may be a need for technology integration with

external vendors and other service providers. Their primary functions include service strategy, design, operation, and continual improvement of service activities, and being a single point of contact for all technology units and technology-based processes within the organization (Magowan, 2019; Smith, 2019). They may also be involved in asset, change, and release management, and in maintaining a self-service knowledge portal.

Drawing upon the actor-network theory, we conceptualize end users, the shared inbox, helpdesk, and service desk as being actors within the multimodal social network. This move away from the "end-user only" perspective can provide a more comprehensive view of the knowledge order within the social network. Specific questions that are addressed include (1) the centrality positioning of end users relative to the shared inbox, and (2) the strategic role of the helpdesk and service desk in providing specialized knowledge support within the network (3) the impact of knowledge sourced from institutionally mandated support structures on performance outcomes. Addressing these questions will enable organizations prioritize the relevance of each of these support structures during enterprise system implementation.

5. Research Framework

We now examine the shared inbox, helpdesk, and service desk from a social networking perspective. They are conceptualized as external knowledge support nodes within the multimodal knowledge social network. Prior research has focused on the centrality concept – in general, the extent to which a network member has connections with other members of the network. It is usually measured in terms of the number of ties a member has to other members of the network or the extent to which a network member may be between otherwise unconnected members (Hanneman & Riddle, 2005). Central members have more connections than other members and are better positioned to acquire valued resources and are viewed as powerful within the network (Brass, 1984, 2011; Hanneman & Riddle, 2005). In the context of an enterprise system implementation, multiple end users within the network would have posted their questions and queries to the inbox, and these would conceivably have been addressed by other end users who have had similar experiences in the past. Over time, shared inboxes can mature into a vast database of end user driven discussions on system-related issues and possible resolutions. When extending the social network to include the shared inbox, it is expected to become more central than the most central end user in the network.

P1: The shared inbox will be more central than all other end users within the overall knowledge network.

The amount of effort involved in initiating and sustaining a knowledge tie with the shared inbox is negligible compared to the effort involved in initiating and sustaining interaction ties with other actors of the multimodal network, including the help desk and service desk. Hence it is expected that the shared inbox will be the most central node within the network.

P2: The shared inbox will be the most central node within the overall knowledge network.

The nature of tasks performed by end users would mandate their knowledge needs. Those involved in routine, day-to-day operations would be more inclined to access knowledge regarding "fixes" to immediate operational problems – the stated objective of the help desk. Those at higher managerial levels would be more involved is using the system as a strategic tool to facilitate and streamline cross-organizational business processes – the rationale for the service desk. Hence, if we were to reconceptualize the overall knowledge network into two subnetworks, one including those end users involved in day-to-day operations of the

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organization, and the other including those involved in higher-level strategic operations, the former group would be depending primarily on the help desk for knowledge support and the latter group would be depending on the service desk. We refer to the former group as the operational subnetwork and the second group as the strategic subnetwork. When viewed as network nodes, it is likely that the help desk would be central to the operational subnetwork and the service desk would be central to the strategic subnetwork. Hence, we propose that:

P3: The help desk will be the most central node within the operational subnetwork.

P4: The service desk will be the most central node within the strategic subnetwork.

When knowledge support is germane to the task in hand, it can be expected that end user performance outcomes will be maximized. Hence, we propose an interaction effect between the task performed by an end user (whether operational or strategic) and the external support node accessed (help desk or service desk) on performance outcomes.

P5: The joint effects of the task performed by an end user and the external support node accessed for knowledge acquisition will be positively related to performance outcomes.

An end user approached by other end users for knowledge support regarding the system may choose not to provide such support due to a variety of reasons, including insufficient knowledge regarding the system. In other words, knowledge support would be a voluntary act on the part of the end user. It is also possible that an end user may inadvertently provide incomplete and even faulty knowledge regarding the system (Freeze et al., 2012). However, when institutional support structures (such as the help and service desk) are approached by end users for knowledge support, they are required to provide support, and such support would be of higher quality than that sourced from other end users (Magowan, 2019; Smith, 2019). In other words, the optional knowledge support provided by end users is of possibly lower quality that the mandatory support provided by institutional support structures. Hence, knowledge sourced from institutional support structures can result in better performance outcomes than knowledge sourced from other end users.

P5: Knowledge sourced from the institutional support structures of help desk and service desk will lead to higher performance outcomes than knowledge sourced from end users.

6. Research Methodology
The study setting was a recent Enterprise Resource Planning (ERP) system implementation at an agribusiness conglomerate located in midwestern United States. There was widespread concern regarding knowledge support for effective use of the new system. Hence, top management adopted a three-prong knowledge dissemination strategy: use of a shared inbox and establishment of a dedicated help desk and a dedicated service desk.

Data was collected from heavy users of the system in three different operational groups that were most impacted by the implementation. Such users were identified using transaction logs that reflected both the frequency and complexity of their system-related transactions. An online survey questionnaire was used to collect data. The first part of the questionnaire dealt with networking data – each end user was provided with a list of all other end users within their group and asked to indicate those within their group that they had approached to obtain system-related information. They also had the option to indicate whether they had used the shared inbox, help desk, and service desk for obtaining system related information. This data

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will be used to generate the knowledge network for each of the three groups using the UCINET and NetDraw software, both widely used for social network analysis (Borgatti et al., 2002). The second part of the questionnaire collected demographic and individual difference variables for participants. Their performance outcome was captured using the individual impact dimension of the DeLone and McLean Information Systems Success (DMISS) model (DeLone & McLean, 1992). This dimension captures productivity improvements, time savings, and client satisfaction, and can be viewed as a composite indicator of end user performance with the new system.

6. Current Status
The data has been collected and is being tabularized for detailed analysis. The networks for two of the three operational groups had 27 end users each (80% response rate), and the third operational group had 25 end users (75% response rate). Subsequent analysis for testing the study propositions are now being conducted.

7. Concluding Remarks
Prior research on knowledge acquisition through social networks during enterprise system implementation has focused on knowledge sourced from other end users. Drawing upon the actor-network theory, this study conceptualizes institutionally mandated knowledge support structures such as the shared inbox, help desk, and service desk as network nodes in a multimodal network. Research-wise, this study shifts the focus from end users to external support structures, encompassing a more inclusive "social order" that can facilitate a better understanding of the knowledge dynamics in play during enterprise system implementation. Practice-wise, the results of this study can facilitate a strategic deployment of resources amongst institutionally manadated knowledge structures depending on the implementation context.

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