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# Knowledge Challenges in Enterprise Systems Implementation: A Case Analysis

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## ABSTRACT

Organizations view enterprise system implementations to be challenging, more so in the post-implementation phase, as it involves end-users moving to a new operational paradigm that emphasizes cross-organizational sharing of knowledge and integrated decision-making. Hence, end-users may turn to their informal social networks for knowledge support that can facilitate a better understanding of the system and expedite the incorporation of system functionalities into their work practices. This case study details the planning and implementation phases of an enterprise system, and its post-implementation knowledge challenges. Using a social networking perspective, knowledge-sharing patterns within organizational workgroups with differential performance outcomes are analyzed. The results indicate that while knowledge sharing supports workgroup performance, there is a differential impact based on the pattern of knowledge sharing between knowledge sources having varying levels of domain expertise.

### Keywords

Enterprise system, knowledge networks, enterprise resource planning, technology assimilation, social networks.

## INTRODUCTION

Enterprise systems reconfigure existing business operations to promote a cross-functional, cross-departmental operating paradigm within an organization. Hence, research has focused on identifying factors critical to transitioning from existing standalone systems to the more integrated enterprise systems (Ranjan, Jha and Pal, 2016). This paper describes the planning, implementation, and post-implementation phases of an enterprise resource planning (ERP) system at a higher education institution in the United States. The planning and implementation phases were executed with little or no issues, however, the post-implementation phase proved disruptive due to end-user hostility towards the system arising out of knowledge gaps within many organizational workgroups. While a few organizational workgroups reported markedly improved performance with the new system, the majority reported no performance improvement at all. The differential impact of the system on workgroup performance was analyzed through social networking techniques, by mapping, comparing, and contrasting the knowledge patterns among and between end-users having differing levels of knowledge expertise across top-performing and underperforming workgroups.

## ERP SYSTEM IMPLEMENTATION PHASES

### PLANNING

The ERP implementation project team was composed of external consultants provided by the implementation partners as well as technical and non-technical personnel internal to the institution. The primary role of the external consultants was to facilitate the implementation effort by collaborating with institutional personnel in mapping and standardizing existing business processes to match SAP system requirements. Implementation responsibilities were shared between the functional and technical areas, both of which had external consultants and institutional personnel. The project team researched formal SAP implementation methodologies and benchmarked it against actual implementations in the higher-education sector, connected with peers in industry and academia, and interfaced with industry-based implementation experts. The team drafted the project charter, inventoried existing business processes, workflows, reports, and interfaces, and developed a detailed plan encompassing the scope, time, cost, quality, and risk aspects of the implementation.

### Implementation

The ERP implementation involved four major modules: financials, human resource management, campus management, and materials management. After baseline configuring, unit testing, debugging, installation, integration testing, and quality

assurance, on-line access to the system was enabled (i.e. go-live), and the campus community started transitioning from the legacy system to the new system. Training and education of end-users were emphasized during the implementation phase. This was done through a combination of scheduled face-to-face training sessions, online video tutorials and simulations, online bulletin boards and FAQs, technical forums, and a help-desk. Communication to end-users was facilitated through regularly scheduled town-hall style meetings conducted by project team members. In addition, more focused meetings were conducted within workgroups for clarification of issues related to their specific business operations. Stakeholder groups and end-users were informed that administrative and operational processes would need to change to keep pace with organizational, governmental, and market requirements.

### Post-implementation

In contrast with the planning and implementation phases, the post-implementation phase was a difficult one for the campus community as they struggled to come to terms with the new system. The training and communication units within the project team intensified their activities during this period. The technical and non-technical personnel internal to the institution and part of the project team returned to their workgroups and were encouraged to perform the role of "technology champions" and become the "go-to" experts within their workgroup. These personnel along with those who were directly or indirectly involved with the implementation were amongst the early adopters of the system. While some users transitioned to the new system without much difficulty, others experienced problems attuning themselves to the new system and struggled with the new work paradigm that they had to embrace.

## KNOLWLEDGE ISSUES IN POST-IMPLEMENTATION PHASE

Given that all organizational workgroups where the new system was implemented were subject to the same implementation and change management processes, including identical training and education opportunities, surprisingly, the impact of the new system on performance outcomes was uneven across workgroups. While some organizational workgroups reported markedly improved performance, others reported no improvement or performance inferior to that with the previous system. A scrutiny of end-user complaints from the underperforming workgroups indicated that the system was operating as designed and as intended, however some end-users lacked sufficient knowledge regarding proper use of system features and business processes, which contributed towards their suboptimal use and dissatisfaction with the system. To make matters worse, some of these suboptimal end-users were reportedly "training" others on "proper" use of the system, further exacerbating the situation.

Research has indicated that while formal training and education can provide technical information regarding a system and change management techniques can generate positive perceptions towards a system, employees while executing their work responsibilities take advantage of their informal knowledge social networks to seek system and business process related knowledge from other employees to clarify their doubts and properly integrate the system into their work practices (Phelps, Heidl and Wadhwa, 2012; Sykes, Venkatesh and Gosain, 2009; Sykes, Venkatesh and Johnson, 2014). However, if knowledge sources within the network lack proper understanding of the system, they might inadvertently transfer and perpetuate misinformation, thereby negatively impacting the network (Schmidt, Sasidharan and Freeze, 2013). To understand these issues in the context of the newly implemented system, using social network principles, the knowledge networks of top-performing and underperforming workgroups were mapped, compared, and contrasted, to elucidate knowledge patterns that were conducive to workgroup performance.

## RESEARCH METHODOLOGY

Knowledge exchanges regarding both system usage and business processes were mapped for top-performing and underperforming workgroups based on data collected from end-users through a questionnaire. The questionnaire asked end-users to indicate other end-users within their workgroup that they had approached for system usage and business process knowledge. This enabled the mapping of the knowledge social networks of the workgroups. The questionnaire also collected data regarding age, education, prior experience with technology, training, and computer self-efficacy of end-users, all of which have been found to impact user perceptions towards new technology (Agarwal and Prasad, 1997; Venkatesh and Morris, 2000).

## PRELIMINARY DATA ANALYSIS AND RESULTS

The social networks of the top-performing and underperforming workgroups were subdivided into subnetworks based on the expertise level of end-users. Knowledge acquisition patterns were mapped and one-way between-groups factorial ANOVAs were conducted for the out-degree centralities of end-users in these subnetworks across the top-performing and

underperforming workgroups. Preliminary results indicate that differing knowledge acquisition patterns among and between end-users having differing levels of expertise impacted workgroup performance. Detailed tests are being conducted, the results of which will be presented at the conference.

## CONCLUSION

There is initial evidence to suggest that performance outcomes in workgroups for enterprise system implementation can be attributed to varying knowledge acquisition patterns between end-users possessing differing levels of domain expertise.

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