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Kimberly Furumo

Southern Illinois University at Carbondale

John Pearson

Southern Illinois University at Carbondale

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A Case Study of ERP Implementation in Two Public Universities: Why Was One a Success and the Other a Failure?

Kimberly A. Furumo

Southern Illinois University at Carbondale
kfurumo@siu.edu

J. Michael Pearson

Southern Illinois University at Carbondale
jpearson@cba.siu.edu

ABSTRACT

While enterprise resource planning (ERP) systems have the potential to offer benefits beyond traditional legacy systems, many organizations report that these systems have been less successful than originally anticipated. Previous studies have identified a number of critical success factors (CSF) that influence ERP success. Identification and use of critical success factors is beneficial but to fully understand problems related to ERP implementation, researchers need to use a dynamic theory to study how organizations adjust to the social changes that are required to bring about a successful implementation. In this case study, Adaptive Structuration Theory provides a framework within which critical success factors can be studied. The organizations under study are universities of similar size and mission in the same geographic area implementing a human resource module of the same ERP system. The ERP implementation projects at both universities will be analyzed to determine why one failed and one was successful.

Keywords

Enterprise Resource Planning, Critical Success Factors, Adaptive Structuration Theory, Case Study.

INTRODUCTION

In the last decade, there has been a move by organizations to purchase application systems rather than develop them in-house. Potential advantages of purchasing rather than developing a software system include reduced cost, rapid implementation, and better system quality (Lucas, Walton and Ginzberg, 1988). As a result, comprehensive packaged systems known as Enterprise Resource Planning (ERP) systems have gained popularity. Despite the potential benefits of ERP applications, a majority of these projects are considered to be partially or fully unsuccessful (Griffith, Zammuto and Aiman-Smith, 1999).

In this research-in-progress, a case study analysis of two similar universities is being conducted. Both universities attempted to implement the same module of an ERP system, one failing and the other succeeding. This study will analyze the factors which led to success or failure and compare these findings with previous studies. Before beginning the case study, a thorough literature review was performed and a set of general questions was developed for use in interviews with the Chief Information Officer, the project implementation team leader, and two members of the ERP project team at both universities. Meeting minutes, policies, timelines, and project schedules will also be reviewed.

CRITICAL SUCCESS FACTORS

Most of the ERP studies have utilized a case study approach and have focused on identifying why ERP projects fail and what factors are critical to successful implementation. The critical success factors (CSFs), identified in these studies, can be classified into the following categories: technology fit, change management, organizational culture, project management and management advocacy.

Technology Fit

One study (Markus, Axline, Petrie and Tanis, 2000) found that many organizations experienced problems with the ERP software itself. While vendors suggest that the integrated ERP systems contain everything needed to handle business operations in an organization, many companies had technical problems. Companies also had difficulty finding experts who could provide advice on the precise operating requirements of the ERP configuration.

Other technical problems included difficulty with program modifications, the need to retain some legacy systems, and deficient data reporting capabilities of the ERP system. So while vendors suggest that ERP systems are easy to install and

provide functionality, this is not always the case. Adapting the ERP to the specific needs of the organization is one of the most difficult challenges faced by organizations.

Change Management

ERP implementation requires that organizations adapt to the standardized software by either implementing program modifications or by reengineering business processes. Business process reengineering helps align an organization's business processes in accordance with the ERP business model. This implies changes in the way that organizations do business. Changing business processes can lead to different power structures and resources allocations (Hong and Kim, 2002). Resistance to change results when job content is changing and individuals are uncertain about the new system (Jiang, Muhanna and Klien, 2000). Many ERP implementations face organizational resistance because of the disruptive change brought about by the implementation (Laughlin, 1999). For ERP installations to be successful, managers need to control the change management process associated with business process reengineering.

Organizational Culture

Organizational culture is defined as "shared perceptions, patterns of belief, symbols, rites and rituals, and myths that evolve over time and function as the glue that holds the organization together" (Zamanou and Glaser, 1994). Other studies have suggested that organizational culture impacts the way employees think, interact, and communicate with each other and influences change initiatives within an organization (Sheng, Pearson and Crosby, 2003, Hoffman and Klepper, 2000).

Organizational culture has been operationalized in the Organizational Culture Scale (OCS) and is comprised of the following six components: teamwork, climate and morale, supervision, information flow, involvement, and meeting (Glaser and Zamanou, 1987). Using these elements, Sheng et al. (2003) studied the impact of organizational culture on computer self efficacy. Teamwork and information flow were found to greatly improve employees' computer self efficacy, suggesting that companies transitioning from one computer application to another should monitor and promote their employees' computer self-efficacy.

Project Management

Since ERP implementation requires an extensive collaboration effort between information technology staff, end-users, upper management, vendors, and possibly consultants, project coordination is crucial. Information systems (IS) project management studies have identified critical success factors such as leadership, goal setting, and planning when developing and integrating software systems (Abdel-Hamid, Sengupta and Swett, 1999, Aladwani, 2002, Birkhead, Sutherland and Maxwell, 2000, Deephouse, Mukhopadhyay, Goldenson and Kellner, 1996, Hartman and Ashrafi, 2002).

Another factor that is likely to influence IS project success is the existence of a project "champion". Champions are transformational leaders who inspire others to transcend their own self interests for a collective higher purpose (Burns, 1978). According to Beath (1991), information technology champions actively promote their personal vision for using information technology which helps clear implementation hurdles. Studies have found that an important antecedent to successful IS implementations is the assignment of a project champion (Reich and Benbasat, 1990, Beath, 1991).

Management Advocacy

Aladwani (2002) found that management advocacy influenced IS project management success. Management advocacy or top management support refers to the commitment of resources to the ERP implementation. Active participation by upper management helps to promote the project and insures that adequate resources are devoted to it.

Top management must identify people, free them from other responsibilities, and empower them to complete the work of the project (Chen, 2001). Additionally, resources may be needed to hire consultants, pay for training and special system tools, provide incentive bonuses for project team members, and insure that salaries are adequate so that employee turnover is kept to a minimum. Turnover of project personnel is a significant problem in ERP implementations (Markus et al., 2000).

LIMITATIONS RELATED TO STUDYING CRITICAL SUCCESS FACTORS

While studying CSFs is helpful, using this approach alone does not recognize the transformational nature of ERP systems. The CSF approach views ERP implementation at a moment in history rather than considering the dynamics of the change process required to bring about success. ERP implementation requires a shift from the centralized legacy environment to the distributed ERP environment. The CSF approach assumes the problem to be static and doesn't look at the dynamic, ever-changing environment. Irani and Love (2001) suggest that "the effective management of technology needs to be viewed as a structured iterative business process, which offers organizational learning during the lifecycle of the technology."

To understand why ERP implementations fail, researchers must study the problem from both a static or point-in-time perspective in which critical success factors are identified and a dynamic perspective in which the impact of environmental

process changes are studied. Adaptive structuration theory (AST) offers researchers a guide to studying the dynamic process of technology adoption. AST, originally proposed by DeSanctis and Poole (1994) as an extension to Giddens (1979) structuration theory, helps researchers understand how technology structures trigger organizational change. Central to the theory is the idea of structuration, which is the process by which groups create and maintain a social system through the application of rules, resources, tasks, organizational culture, and group norms (Chin, Gopal and Salisbury, 1997).

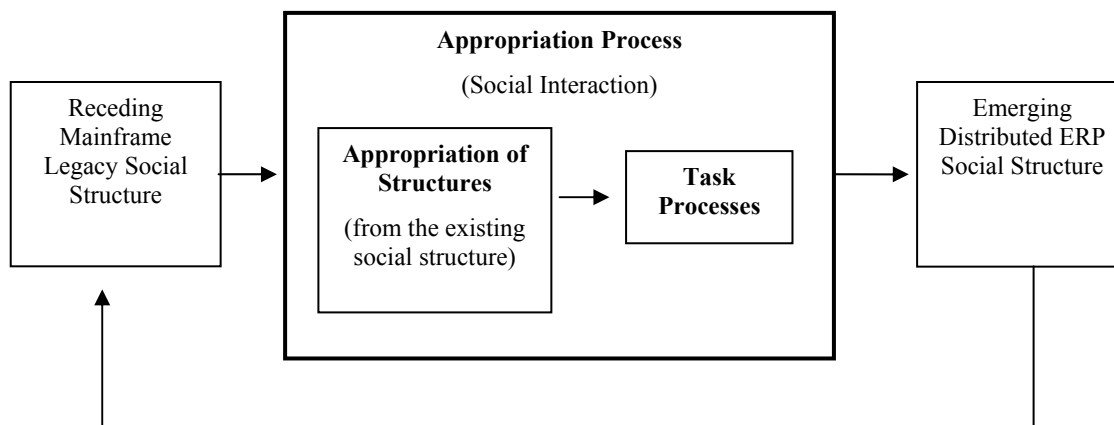
AST has been proposed as a viable approach to examining the impact of advanced information technologies in organizational change (De Sanctis and Poole, 1994). It has been applied to the use of electronic meeting systems (Chin et al., 1997) and Group Support Systems (DeSanctis and Poole, 1994, Gopal, Bostrom and Chin, 1993) to investigate how individuals incorporate these advanced technologies into their work practices. AST thus provides an explanation of how advanced technologies influence social structures and ultimately behavioral change among individuals in an organization.

Figure 1 provides a diagram of the structuration process in ERP implementation. Many organizations attempt to install a new technology on an old social structure. Before the ERP can be successful, the social structure in which it operates must change to accommodate the new technology. For instance, in the previous social structure (the centralized legacy system), end-users had a limited role and relied on the IT department for data while in the ERP environment they are required to extract data for ad hoc reports using query languages. The expectations of end-users and IT personnel must therefore change to accommodate the new system. If the social structure does not change, the ERP implementation cannot be successful.

METHODOLOGY

The case study approach is used in this research to study the ERP implementation process at two public universities in the Midwest United States. Both institutions attempted to implement the same human resource module of an ERP product designed for use in universities. The universities are of similar size, scope and mission. They both have previous experience implementing other modules of the same ERP system. These universities were chosen because their similarities allow for some control over nuisance variables (i.e., budget, number of students, regulatory requirements) which may have influenced implementation success if other universities had been chosen for the study.

Figure 1



In the first phase of the study, four employees (the Chief Information Officer, the project team leader, and two members from the project team) were asked to identify whether their project was successful and to identify perceived CSFs. These questions were designed to study ERP implementation from the static or point-in-time perspective. In the second phase of the study, the ERP implementation process was studied via meeting minutes, policies, timelines, project schedules, and follow-up questions with the original four employees. This second phase was designed to test the incremental steps or the dynamic process which was put in place to accomplish the implementation.

To study how the social structure changed, the project was broken down and studied in smaller phases. For each phase, written documentation was reviewed and employees were questioned to determine which problems occurred and how the team attempted to deal with the problems. An underlying assumption is that many problems in implementation projects

occur because the organization is attempting to fit the new technology to the old, now antiquated, social structure. By studying how the team dealt with problems, a pattern of the structuration process can be established. Successful teams will adapt the social structure to fit the new technology.

CONCLUSION

Preliminary results show that both universities had an understanding of the appropriate critical success factors, however, the university with the successful ERP implementation was able to adapt its social structure to the new technology. While other case studies have provided insight into why ERP projects fail or succeed, this study recognizes the importance of both the static and dynamic perspectives of ERP implementation. Results of this study will provide insight to managers about how they can improve the probability of ERP implementation success in their organizations.

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