

INFORMATION SYSTEMS PROJECT MANAGEMENT DURING ORGANIZATIONAL CHANGE

Heidemarie Winklhofer, Griffith University

Abstract

Information systems (IS) fail for numerous reasons. Reasons may include organizational factors outside a project's control. This article describes research in progress, exploring effects of organizational change on the development, implementation, and operation of IS. A human resources system (HRS) project is discussed in detail, examining the link between organizational change and project outcome. It appears as though the collective and cumulative effects of minor organizational changes on IS project outcomes could be as significant as the influence of radical organizational restructuring. It suggests that organizational changes, even minor, seemingly insignificant changes, need to be identified and their potential influence on IS projects assessed as part of any strategy aiming to increase IS success. Implications of these findings for IS project management are discussed.

Introduction

Organizations increasingly depend on information technology (IT) and information systems (IS) (McKeen and Smith, 1996) as both become ever more critical to organizational success. IS project failure can lead to serious consequences for organizational competitiveness and survival. Pressures mount on IS project managers to lead successful teams. IS development takes place in an organizational context and may "...also be affected by many changes in the surrounding business and technological environment that are beyond the control of the project managers" (Barry, 1997). At a time when organizational change is the rule rather than the exception, organizational transformation needs consideration as a component of effective systems development (McKeen and Smith, 1996). Some information on the impact of organizational change on IS is available (Reponen, 1998); however, organizational change influencing IS projects and effecting the continued usefulness and suitability of existing systems has not been researched in depth.

This article explores current research on the effects of organizational change on the development, implementation, and operation of IS and IS project management. The findings suggest that organizational changes contribute to IS failure and that project managers must be aware of the potential impact. It appears that even minor changes influence IS project outcomes with significant collective effect.

The article starts with an overview of the relationship between IS/IT and organizational change. An outline of the research approach follows. The HRS project, used to explore the effects of organizational change on IS development, implementation, and operation, is introduced. The case study findings are presented and the project management implications discussed. The article concludes with a preview of the next steps in the research program and further research suggestions.

Organizational Change as a Contributing Factor to IS Project Failure

Organizational change continues to preoccupy managers and is extensively discussed in organizational literature (Senge, 1990; Oden, 1999). Change and adaptation are inevitable and vital for organizational survival (Eason, 1988). However, approaches and strategies advocated to ensure IS success build on the notion of a stable organization (Truex et al., 1999). Managing IS projects during organizational changes poses new challenges for IS project managers. Often, organizational change results from internal politics rather than external factors. Project managers have to be as cognizant of political influences (Pinto, 1998) as of new technologies. Today's project managers need the ability to deal with organizational issues as well as possess sound managerial skills. Project managers need to understand that uncertainty created by organizational change can influence a project. Awareness of its impact is crucial for successful IS project management.

This ongoing research aims to explore the effect of organizational change, particularly the potential influence of minor organizational changes on the development, implementation, and operation of IS, on IS project outcomes and the implications for IS project management.

Research Approach and Strategy

Research Approach. A qualitative rather than quantitative research method is appropriate (Bryman, 1989) since the organizational context of IS is the focus of the research. Since various subjective perspectives need to be taken into account, an interpretive approach was chosen. The research focuses on the organizational context of IS development and implementation, making a case study appropriate (Yin, 1994). During the case study, opportunity for informal contact with members of the organization existed, along with participant observation. The researcher was conscious of the historical aspects of the situation.

About the Author

Heidemarie Winklhofer lectures in information systems at Griffith University, Australia. Prior to her appointment she worked 8 years in the IT industry in Australia. She holds a BA, graduate diplomas in information systems and computer studies, and a masters of information science. She has presented papers at several information systems conferences in Australia and other countries. She is currently studying toward a PhD in information systems.

Contact: H. Winklhofer, School of Management, Griffith University, Nathan QLD 4111, Australia; H.Winklhofer@mailbox.gu.edu.au

Refereed case study. Accepted by Hans Thamhain, special issue editor. Previous version presented at 34th Annual Hawaii International Conference on System Sciences.

These aspects are characteristics of ethnography, supporting the exploration of context (Harvey and Myers, 1995).

Exploratory Case Study. From August to November of 1998, the researcher consulted within GBR, the regional office of AIM. AIM is one of three divisions of a state government department comprising six regions created in 1991 from independent branches. GBR has five areas with managers responsible for six to nine branches and employs approximately 500 staff. Although GBR maintains considerable independence, it adheres to state level decisions as well as outside influences. Neither the state organization nor the regional office can control these decisions and their impact on core business activities. The researcher was to identify the information needs of operational management within GBR, investigate current regional and state IS for capabilities to satisfy the needs, and propose strategies to overcome deficiencies.

AIM had recently undergone a major restructure. Power bases shifted and the restructure left in its wake a great deal of resentment throughout the organization. The restructure was supposed to assist in carrying out the mission statement more successfully. The hope was for a leaner organizational structure, allowing deployment of limited resources effectively and efficiently. Despite completion of the restructure, the case study took place while the organization was still in the process of change.

Data Collection. More than 70 unstructured and semi-structured interviews were conducted with all levels of staff at both AIM and GBR. Interview transcripts are the primary data source. Internal documents, including IS project documentation and internal audit reports, were examined and access to the IS was available. This allowed statement verification and IS assessment. Staff interviewed included indirect users, direct users, user managers, and a large number of operational staff. The operational staff was often unaware of various systems, but was required to supply data. The writer worked as a member of the organization allowing extensive opportunities to observe staff and the interaction between different groups and individuals. A project diary was maintained to record informal conversations and observations.

An information systems audit revealed 25 state and four major regional IS, in varying stages of development, implementation, and operation. The attitude among staff towards their usefulness and future success was largely negative. This article explores the effects of organizational change on the development, implementation, and operation of one statewide IS, the human resources system (HRS). It also discusses implications of the findings for project management. The next section provides an overview of the HRS project, outlines the expected benefits, and identifies several problems associated with the system.

The HRS Project

AIM put HRS into operation in 1995 as one of several strategic systems. It allowed the organization not only to replace incompatible local systems, but also to align the HR function of the three divisions. The system was implemented in a top-down approach with AIM management as the major sponsor. The HRS development was outsourced, but the project team included regional and state HR officers who would use the system, AIM and GBR managers, and regional staff. AIM directly controlled IS support for GBR and the other regions. Internal documentation

revealed the project team and sponsor were aware of potential risks and barriers to the project. Plans for continuous improvement of HRS were developed (Operational Plan, 1995/1998). Regional staff involved in the project praised the strategies and spoke well of the staff from the vendor organization.

Anticipated Benefits

Expectations of the benefits were high. HRS was to provide:

- A response to the need for faster, reliable regional and head office human resources practices.
- A decentralized personnel and payroll system.
- A strong management information system (HRS project documentation, 1995).

Benefits of HRS' implementation were targeted at three levels within the organization:

- Executive management by providing a strategic management tool.
- Middle management by supplying accurate and reliable information for management decisions.
- Operational personnel and line management through improved and efficient data processing and flexible reporting facilities (Operational Plan, 1995/98).

Critical success factors for HRS included decentralization of the HR function and adoption of change management and process reengineering (Operational Plan, 1995/1998). Many of these expectations remained unfulfilled.

Unfulfilled Expectations

Interviews with regional HR staff and managers revealed negative attitudes to HRS. The regional HR manager confirmed late delivery of modules, but remained optimistic that full implementation of HRS would lead to significant improvements. All area managers, four of five functional managers and 10 of 21 branch managers stated that access to HRS data should be improved or mentioned system shortcomings. An evaluation of HRS (HRS Post-Implementation Review, 1998) confirmed that significant problems existed. None of them individually caused project failure, but collectively they created major barriers for the usefulness and usability of the system. Many problems resulted as a direct consequence of or aggravated by organizational changes. It appeared that recent and ongoing minor organizational changes contributed and in many instances caused difficulties associated with the system.

Lack of Up-to-date, Accurate, and Reliable Data. The failure to deliver several essential components significantly impacted the usefulness of HRS, including the accuracy and reliability of data. A roster module, planned as part of phase two of HRS project, was never implemented. GBR continued to use its own roster system, initiating a project for redevelopment. Establishment data was duplicated in the roster system and differed from HRS data. Neither system was available at the branch level, so several operational managers maintained their own spreadsheets and databases for staff details.

Regional staff was adamant that the roster system is critical for successful and efficient operations. Rosters had to be prepared prior to operations, making availability of staff data essential. On HRS employees could only be registered after beginning work.

Leave was planned 12 months in advance, but only entered on HRS when taken. HR staff could therefore not provide complete and accurate data on staff availability.

Staff changes seemed not to have been considered by the developers, probably because staff turnover due to resignation or retirement was low. As a result of the internal restructuring, including creation and abolishment of positions, modifications were common. Due to this feature's complexity, errors occurred. Assumptions about organizational stability had been built into HRS. Organizational change therefore contributed to the problems encountered.

Lack of Management Information. As a result of the restructure, area managers became accountable for operations of branches under their control. Management information to support decision-making and help operational managers in the day-to-day running of the branches became critical. However, HRS did "not provide adequate analysis such as trends, graphs, and comparisons" (Strategic Review of IS, 1997). While management information from HRS was available, managers complained that reports were inadequate and difficult to understand.

HRS did not meet one of its expected benefits, the provision of management information for decision-making. Due to the restructure, a larger, more diverse group of managers whose accountability had increased relied on information for effective decision-making. Organizational change aggravated the shortcomings of HRS.

Lack of Ongoing Training and Support. Ongoing support for HRS was mainly provided by the AIM IS team. As a result of the restructure and the initiation of new IS projects, IS support staff moved on to other projects. Lack of communication between the new helpdesk and HR staff caused serious consequences. HR staff was not often aware of new features and problem fixes. HRS "is not being used to its full capacity as a management information tool. There is a lack of knowledge of how to extract data [...] and awareness of the potential information that could be extracted. This is mainly due to the loss of the skill base, because of staff departures, after initial training was given and a lack of follow-up and on-going training" (HRS Post-Implementation Review, 1998).

Many GBR managers were new to their positions or temporarily performed additional duties. Most were unable to specify information requirements or ask appropriate questions of HR staff. HR staff was unsure what information mattered most to managers. Although training and support seemed essential, the areas were adversely affected by organizational changes. HRS fell short of early expectations. Perceptions of whether the project succeeded or failed differed for various groups.

Discussion of the Findings

Whether a project is labeled success or failure depends on the perceptions of people and their role in and view of the IS development process (Lyytinen, 1988). Opinions on HRS' success or failure differed among the various groups within AIM and GBR. Employees who benefited from organizational changes were more positive than those feeling threatened and insecure.

From the IS support staff perspective, HRS was successful. User complaints were explained as users not understanding how to use the system properly. The system was technically sound

and provided the required function. AIM management considered using one HR system across divisions an improvement. Decentralization of the HR function was achieved. However, dissatisfaction and disapproval from GBR management remained, due to the number of regional systems filling the gaps created by non-delivery of HRS modules. AIM management believed regions should wait for IS strategies and systems to be initiated throughout the organization. According to HR staff, HRS worked as required. Inadequate training and support explained many problems they encountered. Generating reports became an issue only as the restructure took effect and GBR managers demanded more useful information. The major problems came from regional managers, the employees most affected by the restructure.

HRS failed based on the project success criteria and did not deliver all of the expected benefits. No single factor appears responsible for the outcome. Reasons for problems associated with IS projects including user resistance, project politics, ineffective communications, differing technological frames, and cultural presumptions have been discussed in the literature (Block, 1983; Orlikowski and Gash, 1994). Many seem to have played a role in the project's failure. Other factors also influenced the HRS project outcome. The usefulness and usability of HRS and its success were also affected by: ambivalence toward the restructure, the communication gap between AIM and GBR and within various organizational groups, the inadequacy of hand-over procedures, and failure to take organizational changes into account.

IS project managers have no control over many external factors influencing a project outcome. Findings from the case study indicate that project managers need to be aware of organizational issues and develop managerial skills that enable them to deal proactively with even seemingly insignificant events.

Ambivalence Toward Restructures. While the HRS was to decentralize the HR function, it was also supposed to bring cohesion to AIM. Although HR responsibility moved to the regions, there was no sense of system ownership (HRS Post-Implementation Review, 1998). While HR decentralization was desirable, IS support was to remain firmly under AIM's control. An ambivalent attitude toward the organizational restructure was also evident within GBR. Area and branch managers were more accountable, but they were still unsure of their roles and responsibilities and were not given the autonomy to carry out tasks effectively. Consequently, information needs were only superficially addressed.

Initially, HRS was a strategic system. Eventually, other systems took priority and HRS became an operational system. Management and support appears to differ for various types of IS (Scarborough, 1996). As the system's status changed, so did the importance AIM management and IS support gave to user concerns. Credibility of HRS and other IS projects was undermined without delivery of essential system components, while competition between GBR and AIM concerning IS initiatives continued. More reliance was placed on regional IS, which affected the usefulness of HRS.

Communication Gap. Communication problems existed between AIM, GBR, and GBR groups. A dialog concerning the IS needs of the region was gradually established between management from both parts of the organization. Ongoing changes such as undefined

and redefined roles created uncertainty and insecurity. This affected information flow between groups. Branch managers complained that area managers did not provide required information, while area managers failed to provide relevant data to the regional executive director and branch managers. These problems already existed, but increased with the organizational changes. GBR staff tried to maintain existence or to establish new information sources. As formal communication failed, the informal organization played an increasing role. With frequent staff and role changes, informal communication, particularly IS support, remained fragile.

HR staff direct users participated in the HRS project. Indirect users, particularly the area and functional managers were not involved in the project. This group needed information more than any other after the restructure, yet had the least knowledge of the IS. Lack of participation in the HRS project was recognized as one of the major causes of its failure (HRS Post-Implementation Review, 1998).

While lack of user involvement in the HRS project can be partially attributed to outsourced development and a communication gap between IS support and regional staff, organizational restructure makes participation more difficult (Reponen, 1998). During IS projects, organizational changes occur when positions are created or abolished and users require access to or information from a system. The HRS project illustrates that ignoring these changes can be detrimental to the project outcome. Project managers need to be conscious of the crucial role communication and coordination play and that organizational change makes well-designed hand-over procedures and change management strategies imperative.

Inadequate Hand-over Procedures. With constant staff changes, determining how the system hand-over took place was impossible. Regional support staff was unaware of procedures or ignored them. AIM management and IS support knew their importance. The IT manager drafted a policy for system hand-over in October 1996 (Draft Policy, 1996). The document remains unfinished and unimplemented. Ongoing operation and maintenance procedures for HRS were also drafted (HR Project Documentation Draft Procedures, 1997). Although good intentions existed initially for the HRS project and AIM IS management, effective action did not follow. New priorities and staff changes made ongoing support crucial, yet prevented its development.

Failure to Take Organizational Change into Account. The system assumed organization stability and control, proving detrimental to its success. HRS project management underestimated or was unaware of continuing organizational changes. Minor changes to roles and tasks continued following completion of the major restructure. During a three month period, one-third of branch managers, one area manager, and four of five functional managers were new or unconfirmed in their positions, on temporary transfer or awaiting redefinition of their roles. More changes to the organizational culture were needed as a consequence of the restructure. Operational managers, demanded greater access to information. HRS was partly designed to provide this support, but top management attitude undermined the effort.

The failure of HRS can be attributed to many things, but organizational change was a contributing factor. The HRS example

indicates influence from the major organizational restructure, as well as minor changes exposed and highlighted shortcomings which affected usability and usefulness. While possible to plan for major change, minor changes may go unnoticed, precluding effective actions. The effect of the minor, seemingly insignificant organizational changes proved more detrimental to the HRS project than the restructure. Organizational change influences IS development, implementation, and operation, making it vital for project managers to respond to the challenges.

Implications for Project Management

This case study suggests IS project managers cannot ignore the effect organizational changes may have on project outcomes. Organizational change poses challenges for proactive address by IS project managers to ensure project success. The attitude of top management toward the restructure becomes an important issue. If the IS is intended to improve organizational cohesion, but also to decentralize functionality, as with the HRS, the contradiction may affect the project outcome. The needs of users constantly change, making continuous IS evaluation a necessity. Communication takes on special significance during organizational change. Reliable hand-over procedures ensure successful implementation and operation of an IS. Changing priorities of HRS after implementation put the system in limbo, with no one taking responsibility for it. IS project management needs to consider the entire life cycle of a system, thinking beyond design and development.

Project managers can take several steps to reduce negative effects of organizational change on IS projects. The following guidelines suggest actions to take to avoid pitfalls associated with organizational change during an IS project.

- Be aware that change is the rule rather than the exception.
- Determine to what extent top management supports organizational changes. If accountability and control are separate, the IS may not satisfy the needs of new and existing user groups.
- Be aware of organizational issues. Take proactive steps to become familiar with the organization, its structure, and culture. Minor organizational changes will affect the composition of groups. New stakeholders with different requirements may emerge. Organizational analysis needs to be part of the development and implementation strategy.
- Do not assume organizational stability after completion of a major restructure. Even minor organizational changes, such as a staff member resigning or redefining a position, can affect an IS project.
- Accept that user needs change continuously (Truex et al., 1999). Regularly evaluate the IS part of the development and implementation, particularly the maintenance process.
- During organizational change, communication is crucial. Hand-over and operation procedures relevant during the system's life can serve as means of communication. IS project managers need to be conscious that circumstances requiring good communication and reliable procedures can be undermined by their efforts.

Change is part of today's organizational reality. Continuous analysis of the IS application, as well as the organization, is critical and needs to be an ongoing process throughout the system's life. IS project managers need to focus as much on the operation of the system as on its design and development. Adhering to some of

these guidelines may increase the chances of achieving IS project success.

Conclusion

Organizational change is usually viewed as a planned process with predictable outcomes beneficial for the organization. This may not be the case. Organizational change can occur unintentionally, in seemingly insignificant stages and get ignored. They may, however, negatively affect IS project outcomes and the organization. Frequent or continuous minor modifications can change the organization as fundamentally as a major restructure with unpredictable consequences. Minor changes initially seem insignificant and get ignored. These "creeping" or "sneaking" changes not only influence IS projects, but also collectively can have a more profound effect than radical changes resulting from business process reengineering.

Exploring the collective effect of minor, often unpredictable, organizational changes on the development, implementation, and operation of IS, their influence on IS project outcomes, and the implications for project management is the focus this ongoing research.

The Next Step and Future Research

The next research step leads to the examination of other IS within the case study organization. It could reveal a pattern of the effects of organizational change on IS development, implementation, and operation. Investigating areas such as user participation and outsourcing may provide an appropriate theoretical framework. The implications for project management could then be investigated in greater depth.

Research needs to address the problem of how project managers can be adequately prepared for their task. Frameworks for teaching IS project management need to be developed to help future project managers identify and address the issues and problems accompanying organizational change and they will have to come to terms with change in today's organizations.

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