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UNDERSTANDING THE CAUSES OF IT PROJECT FAILURES IN GOVERNMENT AGENCIES

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Abstract

This longitudinal study examines the Tax Systems Modernization (TSM) project at the Internal Revenue Service (IRS). The TSM project is a large-scale information technology project that began in the late 1980s and was terminated in 1997. Due to the size, complexity, and duration of the TSM project, over time various factors arose that affected progress and resulted in the ultimate termination of the original project. This study draws from process theories of organizational change to identify and interrelate environmental, structural, processual and technological factors that influence the outcome of large scale IT projects in the government sector. A process perspective will be adopted where the events and episodes that shaped project outcomes at various stages throughout the history of the TSM project will be examined to develop a rich understanding of the causes of the failure of the TSM project. Data collected from a variety of sources will be used in the analysis, such as IRS progress reports, General Accounting Office (GAO) assessment reports of the project, and transcripts of congressional testimonies about the project. A systematic process involving standard qualitative research methods will be adopted in analyzing the data.

An estimated 70 percent of large-scale IT projects fail, many before implementation is completed (CSTB, 2000). In the mid-1980s, the Internal Revenue Service (IRS) petitioned Congress for aid in modernizing their antiquated information technology (IT) infrastructure. The IRS required the modernization to keep pace with a growing volume of tax returns. Audits by the General Accounting Office (GAO) also uncovered serious weaknesses within the agency's financial systems, including cumulative discrepancies in excess of \$30 billion. A decade and \$3.4 billion later, the Tax Systems Modernization (TSM) project at the IRS was terminated, with many of its objectives unfulfilled. The IRS is now beginning another 10-15 year project to modernize its tax systems at an initial estimated cost of \$5 billion to \$7 billion. This scenario is not uncommon in federal and state government agencies where the aggregate costs of failed IT projects are estimated to be over several billion dollars.

Project Overview

This report covers the first component of what will be a multi-year, multi-phase study that examines large-scale IT projects at several government agencies. The first piece of this study is a longitudinal analysis of the TSM project at the IRS. The TSM project is a large-scale information technology project that began in the late 1980s and was terminated in 1997. Due to the size, complexity, and duration of the TSM project, over time various technological and managerial factors arose that affected progress and resulted in the ultimate termination of the original project.

This study draws from process theories of organizational change to identify and interrelate environmental, structural, processual and technological factors that influence the outcome of large scale IT projects in the government sector. A process perspective will be adopted where the events and episodes that shaped project outcomes at various stages throughout the history of the TSM project will be examined. Given the numerous factors and their complex interactions a process methodology that facilitates an in-depth analysis of critical events in the history of the project is necessary to develop a rich understanding of the causes of the failure of the TSM project. Data collected from a variety of sources will be used in the analysis, such as IRS progress reports, General Accounting Office (GAO) assessment reports of the project, and transcripts of congressional testimonies about the project. A systematic process involving standard qualitative research methods will be adopted in analyzing the data.

Project Topic Description and Research Design

The study of large-scale IT systems projects is important because these systems play an increasingly critical role in the functioning of many government agencies. They serve as the “core systems” on which government agencies depend for their routine transactions in serving the public. However, size, the distributed nature, and the transaction volume handled by these systems make them highly complex, which in turn makes their design and development using traditional systems development methodologies very difficult. Moreover, the task environment in the government sector creates contingencies that render traditional project management practices inadequate to handle the design and delivery of complex application systems. Thus, there is a critical need to develop theories and frameworks that address issues specific to the management of large-scale IT projects in the government sector. With the increasing use of IT by various government agencies, the premium for developing practical guidelines for IT project management in the government sector is very high.

The nature of the research project suggests that a process-driven research strategy is appropriate. The process-driven strategy to conducting research on systems development seeks to link sequences of events during an IT project to project outcomes (Sabherwal and Robey, 1995). The data sources for this study are primarily reports, audits, congressional testimony, and other documentation related to the TSM project available from public sources. Through data reduction and selective coding, the phenomena that affect project outcomes will be discovered (Strauss and Corbin, 1990). This process involves identifying major events and episodes that shaped project outcomes and their causes and interrelationships. These events and episodes will be interpreted using appropriate organizational change theories to develop a process theory of project failures in the government sector.

The data analysis will adhere to the case study research procedures suggested by Yin (1994) and Eisenhardt (1989), the meta-analytic research procedures suggested by Rosenthal (1991), and the grounded theory techniques compiled by Strauss and Corbin (1990). The analysis will be facilitated using NVivo, a leading software product designed to facilitate qualitative analysis of this type. In subsequent stages of this research, the findings from the TSM project will be tested against data about other large-scale IT projects undertaken by federal and state government agencies.

Data collection for this project is under way and expected to be completed by March 2001. A rich data set comprising of annual project audits by external agencies, budget reports, problem reports, high-risk assessments, and transcripts of congressional testimony about the project has already been collected. Transcription (entry and validation) of the data, coding and further analysis will follow the data collection. This phase is expected to be completed by August, 2001.

Contribution to Understanding of the Topic

A recent study conducted by the National Research Council (CSTB, 2000) concluded that the scope of existing IT research is insufficiently broad, particularly within the arena of large-scale systems. While there is a scarcity of research on the management of large scale IT projects in general, the report specifically suggested that research focused on federal agencies operating large-scale IT systems is required because of the unique contextual factors that impact IT projects in government agencies.

By examining large-scale IT systems in federal agencies, we will contribute to existing knowledge in this area from several perspectives. Most previous studies of the information systems development process focus on private sector projects, which may be different from public sector projects because of additional constraints and factors unique to the governmental operating environment. Similarly, most studies look at small-scale IT projects or projects of short duration, perhaps because there are fewer variables and some variables are more constant or controllable over short time periods. Opportunities to study large-scale IT projects are also limited by access of researchers to organizations engaged in such projects or the ability of the research team to maintain consistent data collection and access over time. Thus, the IRS TSM project and similar projects in other federal agencies provide rare opportunities to study large-scale IT projects in the public sector over time as they are accompanied by substantive documentation and analysis through auditing agencies (such as the GAO) and testimony to Congress.

Value to the Government Practitioner

Why are large-scale systems in government agencies such an important area for further study? One reason is that large-scale IT systems projects tend to have a high rate of failure both during development and once in operation resulting significant financial losses. In addition to financial losses, these failures cause public relations problems for government agencies. Knowledge about

how to successfully implement such large-scale projects, or avoid failure in those projects, would be of value in the public sector where the number of such projects continues to increase.

Future Research Directions

Future research will involve extending the analysis to other large-scale IT projects such as those undertaken by the US Customs, Department of Defense, Federal Aviation Administration, and Social Security Agency. A comparative analysis will result in identifying common causes of failure across these projects and how they influence project outcome. Such an analysis will help generalize our findings to other government agencies and develop prescriptive guidelines for IT project management for managers in the government sector.

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