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Recommended Citation
Huang Chua, Cecil Eng and Lim, Wee-Kiat, "The Roles of IS Project Critical Success Factors: A Relevatory Case" (2009). *ICIS 2009 Proceedings.* Paper 196.
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THE ROLE OF IS PROJECT CRITICAL SUCCESS FACTORS: A RELEVATORY CASE

Completed Research Paper

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Abstract

Research in Critical Success Factors (CSFs) of Enterprise Systems (ES) projects has identified numerous practitioner governance mechanisms for ensuring project success. However, such research has not developed a theory of why certain critical success factors encourage project success. Our research develops such theory on a case study where even though the levels of several critical success factors were weak, the project nevertheless succeeded. Specifically, the logistics ES project succeeded even though there was (1) only marginal top management support, (2) low key user commitment, and (3) change management, training and other critical aspects of user management and communication were not well done. Using a modified dialectical lens, we highlight that project team legitimacy appears to be the underlying CSF, and many heretofore identified CSFs are really manifestations of project team legitimacy.

Keywords: critical success factors, dialectics, ERP, project management

Introduction

Research examining critical success factors (CSFs) in enterprise systems (ES) projects has become increasingly popular (Plant and Willcocks, 2007). These studies focus on the identification of descriptive lists of conditions that lead to implementation success or failure (Bussen and Myers, 1997). Despite substantial work in this area, the cumulative tradition is somewhat fragmented. For example, the canonical list of CSFs remains an elusive goal. Indeed, not only the number of factors identified seems arbitrary, but even the configurations of CSFs vary across studies having the same number of factors. For instance, CSF lists can comprise as few as 10 (Biehl, 2007) to as many as 35 factors (Bradley, 2008). Similarly, five of Biehl's (2007) 10 factors have no equivalence in Holland and Light's (1999) 12-factor list. The missing factors include organizational change management/managing expectations, training, data accuracy, IS staff capability, and sufficient financial resources.

A close examination of the CSF literature reveals deeper contradictions. For example, while Subramaniam and Lacity (1997) and Petter (2008) allow for a project champion at the departmental (i.e., intermediate) level, Dong (2008) insists that project champions should be senior, i.e., close to the pinnacle of the organizational hierarchy. Bradley (2008) even argues that the CEO, i.e., formal leader of the organization, must head the steering committee.

We argue this tension exists, because CSF research has emphasized identifying CSFs linked to project success at the expense of a more thorough exploration of the causal mechanisms connecting organizational actions and processes to project success. In other words, CSF research has focused on *what* CSFs look like, but overlooked *how and why* they become critical. While the accumulated knowledge of CSFs provides a critical mass for researchers to subsequently distill insights to inform both theory and practice, the various configurations of CSF lists by themselves are unwieldy and shed dim light on the conditions driving projects towards success. Hence, instead of populating the field with more CSFs, we draw on CSFs already identified in the literature to build a CSF-based theory in our paper.

This paper represents an effort to contribute to the CSF perspective by considering this gap in CSF research. Conceptually, we focus on the theoretical underpinnings of critical success factors. We use a modified Hegelian-Marxian dialectical lens to interpret the paradoxical tensions in the literature (Poole and van de Ven, 1989; van den Berghe, 1973) and guide our theorizing and analysis. We begin with a modest examination of three core CSFs, which by our survey of current literature, should be observable across all successful projects.

Related Research

Given the existence of several hundred critical success factors, we needed to condense them before developing our theory. We identified three success factor groups. These were derived by identifying and categorizing success factors after a major literature search. Each success factor group synthesizes over 20 separate success factors. Our goal was simply to transform the problem of examining success factors into a tractable form that the CSF research community would recognize as being legitimate. Thus, we do not claim the success factor groups we identify are either the most important, or that they represent a definitive categorization of success factors. Instead, we assert the groups presented are a reasonable categorization that enables conversation on CSFs to move forward. Reviews of the CSF literature have been done elsewhere (Aloini, et al., 2007; Loonam and McDonagh, 2005; Ngai, et al., 2008).

Our categorization exercise reveals six success factor groups that capture most success factors identified in the literature. These are (1) Top Management Support and Project Championship, (2) User Participation, (3) User Comfort With System, (4) National/Organizational Characteristics, (5) Project Management and (6) Vendor Management. Group 4 (National/Organizational Characteristics) was not considered in this study, as our case was embedded in only one locale, with predominantly a single national culture specific to one organization. The lack of variability did not permit us to draw any meaningful analysis from this group. We also dropped groups (5) and (6), mainly because theory on project management and vendor outsourcing have been developed elsewhere. As our goal is to develop theory specific to CSF research, omitting these groups preserves the parsimony and integrity of theory we would develop. Furthermore, omitting these groups does not sacrifice our ability to make sense of how and why projects succeed – we can draw on the wider project management and outsourcing literature to supplement our theorizing. While groups 4 to 6 are excluded in this study, they are strong candidates for future investigation. Mappings from existing literature to the six success factor groups are available from authors.

Top Management Support and Project Championship

Most critical success factors research has found top management support and project championship important for project success. Generally, top management support is defined as top management being involved in a project in three ways: (1) as champion, (2) by providing resources, and (3) by participating in the project (Subramanian and Lacity, 1997).

Championship. CSF research recognizes that top management is important as a symbol of enterprise authority to reinforce employee commitment to the project (Wang, et al., 2008). Thus, the champion generally is thought to be at the executive level with sufficient formal authority to push the project agenda through (Akkermans and van Helden, 2002; Nah and Delgado, 2006; Nah, et al., 2003; Ngai, et al., 2008; Somers and Nelson, 2001). The champion is an advocate who is unswerving in promoting benefits of the new system (Parr and Shanks, 2000). The champion role is a highly public manifestation of top management support. The champion must publicly identify a project as top priority (Nah, et al., 2003), and mediate between separate stakeholder groups in the project (Ngai, et al., 2008; Somers and Nelson, 2001). The champion must also provide a clear vision, clarify communication, and reduce organizational resistance (Kearns, 2007; Loonam and McDonagh, 2005).

Because the champion role is so important, some research insists the champion be the CEO and/or CIO (Emery, 1990; Lah and Mahapatra, 2004; Loonam and McDonagh, 2005). Others include those lower down in the hierarchy, defining top management as the CEO as well as his direct reports (Green, 1995). Still others consider top management to include individuals involved more in governance than in operational decision making (Dong, 2008). Some work elects not to precisely define which layer top management stops at. Ngai and colleagues (2008), for example, simply consider top management to be "senior executives."

Resource Provision. Beyond championing the enterprise system, top management also has a role to play in ensuring the system is adequately funded , and that personnel necessary to the project can be made available to it (Loonam and McDonagh, 2005; Nah and Delgado, 2006; Parr and Shanks, 2000). Thus, top management support must also manifest in the form of resources provided to the project. Emery (1990), for example, recounts a case where the CEO himself selected the hardware and implementation tool.

Participation. For a project to succeed, top management must also be engaged in the project, and should be present for the entire project duration (Aloini, et al., 2007). The presence and visibility of top management is thus, another important manifestation of top management support. Generally, the larger the project, the more work top management must do (Young and Jordan, 2008). Top management must set the project goals (Nah, et al., 2003) and help solve management problems (Young and Jordan, 2008). Bradley (2008), for example, argues the CEO should be involved in planning and implementation and should head the steering committee. Research also suggests that the level and the type of top management participation is also contingent on project characteristics, such as task interdependence and users' IT skill level (Dong, 2008; Sharma and Yetton, 2003).

User Participation

The user participation CSF argues that for an IS project to be successful, the developers must be able to understand what the intended system is planned to perform. Generally, developers obtain such insights via engagements with users and management. The user participation CSF thus embodies two distinct notions: (1) users must be encouraged to participate in the project, and (2) user participation in the project must be managed to avoid negative effects (e.g., scope creep).

Encouraging Participation. Substantial work has emphasized the need for user participation in IS projects. Perhaps the most visible is that many authors argue that in order to achieve project success, relevant user experts need to be released to a project on a full time basis to guide requirements gathering (Parr and Shanks, 2000; Subramanian and Lacity, 1997). Others stress that users must be able to shape process and outcome, and that top management support must be present to encourage user participation to provide and clarify requirements (Domodaran, 1996). Users must have access to developers (Grohowski, et al., 1990), and there must be clear, open and honest communication between the two groups (Nah, et al., 2003; Ngai, et al., 2008; Petter, 2008; Remus, 2007; Somers and Nelson, 2001). Furthermore, users should not just give requirements, but should ensure requirements are implemented correctly. User participation in quality assurance is key (Domodaran, 1996). Users must be psychologically in a state of participation (Wang, et al., 2008), and users across departments must be willing to cooperate (Akkermans and van Helden, 2002). The IT department must build relationships with users to ensure these occur (Willcocks and Sykes, 2000).

Managing Users. However, the CSF literature also cautions that users should not dominate the project. The project team must also invest heavily in business process reengineering (Biehl, 2007; Ngai, et al., 2008; Plant and Willcocks, 2007; Subramanian and Lacity, 1997). Business process reengineering is critical in enterprise systems, because the team must often determine whether a system should be customized to user needs, or whether users must adapt their processes to system defaults. Generally, the latter is preferred (Esteves and Pastor-Collado, 2001; Nah, et al., 2003; Remus, 2007; Soja, 2006; Somers and Nelson, 2001). In addition, one goal of enterprise system implementation is to enhance existing business processes, either through the adoption of best practices, or by integrating the processes of separate departments (Law and Ngai, 2007). Scope creep is generally to be avoided (Ngai, et al., 2008).

User Comfort with System

The "user comfort with system" success factor group differs from "user participation" in that the former is a psychological state, while the latter captures the activity of a group. Simply put, while users could be active in specifying requirements, they could still reject the final delivered system. User comfort with system thus captures such critical success factor manifestations as change management (Aloini, et al., 2007; Lah and Mahapatra, 2004; Loonam and McDonagh, 2005; Remus, 2007; Somers and Nelson, 2001), training (Aloini, et al., 2007; Grohowski, et al., 1990; Loonam and McDonagh, 2005; Remus, 2007; Somers and Nelson, 2001), the management of user expectations (Petter, 2008; Somers and Nelson, 2001), and some aspects of open communication (Nah and Delgado, 2006; Nah, et al., 2007), and project promotion (Ngai, et al., 2008; Remus, 2007).

Paradox and Modified Hegelian-Marxian Dialectic Lens

We draw heavily on the work of Van de Ven and Poole (Poole and van de Ven, 1989; van de Ven and Poole, 1995) to craft our analytical approach. They argue that researchers often overlook the opportunity afforded by theoretical tensions. The paradox that emerges from theoretical contradictions helps clarify and reveal alternate explanations which take into account propositions from differing theories.

Our approach begins with the assumption that projects are fundamentally about change. The project team attempts to deliver some product that changes the way some organization or group does work for the better. Van de Ven and Poole (1995) suggest that gaps in change research can be addressed by applying a new conceptual motor to the problem. A conceptual motor is a "basic theory" that governs how we view a phenomenon. In a sense, a conceptual motor is a precursor of a theoretical lens.

There are four basic conceptual motors – (1) life cycle, (2) teleological, (3) dialectic, and (4) evolutionary (van de Ven and Poole, 1995). Critical success factors research has predominantly been characterized by the life cycle motor, the hallmark of which is that change is immutable and deterministic. Thus, given/absent a set of critical success factors, a project will succeed/fail. The problem with a life cycle motor is that there can only be one life cycle. Contradictions or inconsistencies in the literature can only imply imperfections in the conduct of research (Robey and Boudreau, 1999). As noted earlier, the CSF literature contains several inconsistencies.

This research subscribes to the dialectic motor. Simplistically, in a dialectic motor, change is predicated on a conflict between two elements, a thesis which represents the status quo or forces against change, and an antithesis which represents the forces for change. These forces battle with each other, resulting in a synthesis, i.e., an outcome determined by the power of the thesis and antithesis and the way power is applied. Most typically, the synthesis is a novel construction that emerges from the conflict between thesis and antithesis (Merton, 1936; van de Ven, et al., 1976). Thus, contradictions and inconsistencies in the literature can be explained by subtle variations in the power of the thesis and antithesis (Robey and Boudreau, 1999).

The use of a dialectic motor is not new to Enterprise Systems research. Such motors have been employed to explore how knowledge barriers to implementation (Robey, et al., 2002) and misalignments between the enterprise system and business (Soh, et al., 2003) can be overcome.

Our emphasis on the dialectical motor translates to our choice of a modified Hegelian-Marxian lens (van den Berghe, 1973), as both Hegel and Marx recognize change as a dynamic process characterized by conflicts and contradictions. Unlike the lens applied by Robey et al. (2002) and Soh et al. (2003), and in keeping with the writings of Hegel (1969) and Marx (Tucker, 1978), we view the world as being in continuous conflict. There exists not just one thesis and antithesis, but a plethora of theses and antitheses on multiple levels. Tensions occur in

research (e.g., in the CSF literature), in practice (e.g., within our case study), and between research and practice. In our case study, we will show that typical manifestations of CSFs are absent at project inception.

To summarize, the dialectic motor and our choice of the modified Hegelian-Marxian lens may prove to be useful to examine change. As noted by Edmondson (2003), the implementation of new technologies is highly disruptive. It compels users to break away from existing routines to re-learn their duties and how to work with others. This inherent resistance and bias towards inertia predisposes a dialectic view to examine and reconcile the contest between status quo and change.

Research Methodology

Our research uses a revelatory case approach (Yin, 1994). A revelatory case discusses a phenomenon previously inaccessible to science. In this paper, we present a case where traditional manifestations of critical success factors are conspicuously absent, yet the enterprise system implementation was viewed as a success. We also elaborate the case history as well as how data collection shaped our analysis and theorizing.

Case History

This case is an account of the final project implementation of an organization-wide ERP system in a logistics organization from 2007 to 2008. The organization itself is large, having an operating budget in the billions of dollars and more than 72,000 employees. This implementation would provide 600 users across 19 administrative units with procurement and maintenance capabilities. The financial information associated with procurement and maintenance would also be embedded in the system.

Historically, the logistics organization relied on three loosely-connected enterprise systems, one for each business unit (B.U.). The organization elected to replace these three systems with a single integrated one. The cost of this audacious ES project was in the hundreds of millions of dollars.

The design of this mammoth enterprise system was performed over 14 months from 2003 to 2004. The system was then implemented for each business unit on a yearly basis. The logistics organization chose to begin implementation in the first month of their fiscal year, and conclude by the last month in their accounting calendar. The design and each implementation was a separate project with a separate project manager. The implementation for two of the B.U.s was done by another vendor from the one that designed the system. Even the project director for these four projects changed once when the head of operations retired. The second project director (i.e., the new head of operations) also retired shortly after the completion of the implementation for the last B.U. in 2007.

By late 2006, the organization not only knew that the implementation for the last B.U. would be successful, they also realized that the master plan had omitted the integration of a critical component of the company's operations — the corporate HQ itself. Thus, a new project was planned to integrate the various administrative units in the corporate HQ as well as smaller administrative units in the B.U.s with the system. This new project was completed by mid-2008. Hence, this last project marked the true completion of the logistics organization's entire ERP program. The implementation to integrate the administrative units, which began in April 2007, ended on time and to budget in April 2008.

Data Collection

We were invited by the IT group of the organization to observe the evolution of this enterprise system since January 2003. While we remained "outside observers" to the company (Walsham, 1995), we had been with the company for five years. Our long-term presence meant the project team had become sufficiently comfortable with our presence that they entrusted us with very candid and revealing comments. The organization requested that we observe the case site and develop case reports for the internal training of project managers. We obtained comprehensive access to project documents and conducted interviews with key stakeholders representing the client, incoming and outgoing vendors. Our privileged access and our long-term involvement familiarized us to the project's history and the legacy behind specific organizational actions (Golden-Biddle and Locke, 1993). This deep knowledge of the organization and project gave us a nuanced understanding of issues that deepened our analysis. Klein and Myers (1999) call this "The Principle of Contextualization."

In addition, we conducted several hundred interviews across a wide variety of stakeholder groups across the five years. For this project, we relied predominantly on data collected from April 2007 to October 2008 (i.e., including post-implementation). We conducted 41 interviews with representatives from consultants, users, the Finance department, the Operations department, in-house IT, and corporate leadership. We also met with multiple interviewees from each stakeholder group. As interviews were obtained across all stakeholder groups, we were able to obtain multiple interpretations of the project and its events (Klein and Myers, 1999). Table 1 presents a list of interviewees.

Table 1: Breakdown of Interviewees and Frequencies

Stakeholder Group	Number of Interviews	Number of Distinct Interviewees
IT Management	14	12
Finance Management	9	6
Consultants	6	6
Users from Corporate HQ	9	9
Operations	3	3
Total	41	36

Interviews were always conducted by multiple interviewers, allowing us to triangulate perceptions with one another (Eisenhardt, 1989). They were also quickly transcribed in 24 hours. In our transcription, we noted our interviewees' choice of words and their nonverbal behavior (e.g., nervous laughter). We also heavily footnoted our transcripts with information from other sources (e.g., prior interviews and project documents) to highlight both instances of convergence and divergence with our existing knowledge.

We enjoyed access to minutes of meetings at three separate levels: (1) the weekly operational level meeting chaired by the project manager (a manager from Finance), (2) the fortnightly senior management meeting chaired by the Operations department who owned the system, as well as (3) the bi-monthly meeting of the Finance department that focused on the implementation and how it fit with Finance's strategy. This third meeting was chaired by the Director of Finance.

We also obtained related presentation slides, Excel worksheets, timeline and other project management charts, bug reports, change request and other project documents. In sum, documentation available to a project manager and many associated with departmental strategy were made available to us.

Analytical Process

As this was the fifth project in a series, a substantial component of our analysis followed certain established processes. Specifically, we wrote a diagnostic case for the organization every year. These write-ups were submitted to the client organization for comment (Levina and Ross, 2003). Client feedback was useful at two levels. First, the organization would elaborate on our analysis in writing, providing us with additional data. Second, the comments provided official confirmation that our understanding of organizational issues were not a product of wrongful interpretation by researchers (Mason, 1996). Klein and Myers (1999) call such dialog "the principle of interaction between researchers and subjects."

One strength of the interpretivist approach, is it encourages researchers to leverage on prior knowledge and understanding (Strauss and Corbin, 1990). As this project evolved, we leveraged on our knowledge of the CSF literature to anticipate (among ourselves) that the project would fail. Thus, while we were pleasantly surprised when the project was on schedule at the halfway point despite poor CSF manifestation, we also maintained a healthy suspicion of our interpretation in accordance with the principles of dialogic reasoning and suspicion (Klein and Myers, 1999). We probed the organization during that period to seek both alternative interpretations as well as more nuanced views of why the project was successful. When our probes indicated that the project was indeed on schedule, we realized we had a useful revelatory case to extend CSF research. In summary, our data collection and analysis methodology followed several interpretive principles as proposed by Klein and Myers (1999) to explore the relationship between CSFs and project success.

Data Analysis

In keeping with our dialectic lens, we present our data to highlight various tensions. First, we present a tension between CSF research and our data. We demonstrate that the project in our case was successful. We then retrace the project's trajectory to search for evidence that the three selected CSFs could have shaped this positive outcome. Our analysis shows the three CSFs did not clearly manifest in the project, thus highlighting the dialectic between current literature and our data. Following that, we describe in detail how the project succeeded despite the lack of CSF manifestation. The narrative reveals idiosyncratic and highly contextual tensions that provide the impetus to this particular project, specifically to the agenda of the Finance department. We identify how elements of this project and some other Finance-based initiatives provided the materials to reconcile several of these tensions and produce fresh theoretical insights on CSFs.

Project Success

One of the company's objectives when it conceived of the integrated enterprise system for the three business units in 2003, was it would phase out a number of smaller legacy systems in procurement, maintenance, and finance. In 2006, the company realized that they could not phase out the legacy financial MIS, because it obtained data from not only the business units, but the corporate headquarters as well. It was important to replace, and not just phase out the old system, because the old system generated automatic reports to external reporting agencies. To properly phase out the old system, the financial processes and data from corporate HQ would have to be moved to the new enterprise system, which would then generate these external agency reports. As all financial processes and data would have to be moved, the organization felt corporate HQ should simultaneously integrate its procurement and maintenance functions with the new enterprise system as well. Thus, in April 2007, the company began the process of extending the enterprise system to cater to corporate HQ. The system rolled out successfully in April 2008. Financial information in the company was successfully compiled using the enterprise system.

Biggest compliment is that the launch is a non-event. Nothing happened. It's smooth. [Helpdesk complaints] is pretty low. There are no major failures… It's a very quiet event. (IT Manager)

We just submitted the… accounting [reports generated from the new system], and [CEO] has signed, so my boss [Finance project manager] is now happy like bird. (Finance Manager)

The number of helpdesk complaints was the lowest across all prior logistics enterprise system implementation projects. To contrast, the number of helpdesk tickets in the first six months in prior implementations was as high as several thousand per month. For this implementation phase, the total number of tickets did not hit 300.

[Helpdesk tickets] are only a fraction of [prior phase]. We tell people we are the most successful. It's in the low hundreds. (Finance Manager)

In addition, almost all requirements were met. Of the 58 high-level requirements the project was scheduled to complete, one was delayed for one year. The incomplete features in the requirement related to a single sub-department in the IT group. Everyone else involved in the requirement gathering was able to use the feature as-is.

Absence of Critical Success Factor Manifestation

In sum, the project was regarded as a success. However, the achievement creates a puzzle as our analysis shows that the project lacks key conditions identified in the CSF literature as critical for success. Specifically, the project head (Finance director) and project champion (CIO) failed to motivate users. Furthermore, user participation was problematic, and many stakeholders were, at best, ambivalent about the system, and missed training.

Top Management Support and Project Championship. In all previous projects, the Operations group of the company led the project. This was because the focus had been on ensuring logistics operations in the three business units continued to function. In contrast, the focus of corporate HQ was principally administrative and strategic. Thus, top management felt that procurement and maintenance, although present, was substantially less critical for its day-to-day running. Since the objective of the project was chiefly to integrate corporate financial functions into the system, the Finance department, rather than the Operations department, took charge of the project.

To clarify the complexity surrounding this project in terms of hierarchy and responsibilities, we elaborate on the organizational structure of this logistics organization. Figure 1 illustrates the lines of authority in the organization salient in the project. Departments in bold were those that held responsibility in the project. As shown in the figure,

Internal Logistics, Finance, and the Implementation Team in the Enterprise Systems Department of the IT group are the departments which managed the project. The Internal Logistics department reported to the Operations group; The Finance department had to report to the Admin group; and the IT implementation team reported to the Enterprise Systems department, which in turn reported to the IT group. In all cases, individuals holding authority in the project were hierarchically at least two stations removed from Corporate HQ, where the CEO resides.

To further clarify the status of project owners, the Finance Director is equivalent to assistant vice-president in this organization. This person reported to a vice-president responsible for the Admin group. Other entities in the Admin group included the human resource and legal departments. From the Corporate HQ, units which were included in the project were R&D, strategy and scenario planning, and finally media and industrial relations. The 19 units to be put into the enterprise system were all at the "same level" as the departments advocating the system.

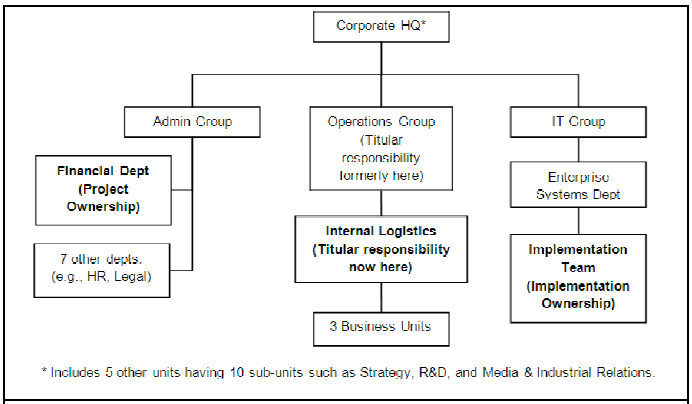

Figure 1: Organizational Hierarchy Pertinent to Project

While the Finance department owned the project, the Internal Logistics arm of the Operations group owned the enterprise system. Previously, system ownership had been at the Operations group level. However, because implementation for the Operations group had been completed, and because the Head of Operations had retired, system ownership was moved one level down so the Operations group could focus on other issues.

Although the Finance department headed the project, it exercised weak authority over other stakeholders. Also, some authority was vested in Operations, as well as another department from the IT group, as the latter was responsible for the technical deliverables.

Furthermore, in contrast with most organizations where finance departments hold substantial power, the Finance department in this company did not enjoy the level of power that allowed them to direct the project by fiat. The company had an "operations" driven culture, where planning and execution were more important than administration. Thus, units like strategy and R&D were considered more important than Finance. Finance was regarded as a secretarial function and more clerical in nature. Hence, it enjoyed lower status compared to other departments.

…In [this project], I grapple with the hierarchy from the onset. For older implementations, [Head of B.U.] says go, everyone falls in line. (Finance project manager)

The inability of the Finance department to properly champion the project can be seen in the reduced user roles in the project as compared to the enterprise system implementations for the operations group described in the subsection on "Clear requirements" below.

The company CEO was aware of the project, but did not participate in any material sense. The former CEO's main contribution had been to deliver a speech about the strategic necessity of the operations projects in January 2003 during the kick-off. It was widely recognized that "[top] *management support is cosmetic*" (Finance Project Manager). At no time during the project did anyone of a higher grade than an assistant vice-president visit the project worksite.

The only non-finance, non-operations member of top management who was clearly supportive was the Chief Information Officer (CIO). The CIO had asked Finance to allow the IT group to handle the project implementation.

Finance was reluctant, preferring a vendor. The CIO lobbied the CEO who agreed to have the IT department perform the implementation. The CEO's decision centered on the fact the company was running or developing several enterprise systems concurrently. In addition to the logistics system, the company had a business warehouse, and a land and building management system. It was also developing a human resource management enterprise system. The CEO recognized that the company would need to keep technical IT staff happy to ensure all these systems would run over the long term.

[Finance] objected to it. [Finance]'s value proposition was they could sit comfortably, throw a contract and play off competition across vendors, which drive down costs. [There were also] resource considerations – whether [Corporate IT] team would be full-time or double-hat. For three months it went ding-dong [back and forth]. On Christmas Eve, all the chief protagonists sat down and made a decision. [CEO Office] was very clear. They agreed to this approach on two considerations: One, capability build-up. [So many systems are on enterprise platform]. Two, he also stated that we need to take it up because staff retention was important. Over the years we build up this pool of people. If we don't use them, they will leave. (IT manager)

Since the CIO had lobbied for IT to play a major role, he was under pressure to ensure it would not be a contributor to failure. In most projects, there are grey areas where the line of responsibility between IT and the project management group are not clear-cut. For example, a failure in a module could either be because IT failed to implement requirements correctly, or the requirements were not transmitted to IT effectively. The attitude of the CIO, and therefore the IT implementation team, was to minimize these risks. This meant that IT would be highly cooperative.

We have an understanding. We won't say "Go fly a kite." If we must do a higher order analysis to understand the cost of the new scope, we will do it. But it doesn't come at the price of proper project management and we discuss it from there. (Corporate IT Project Manager)

It also meant that the CIO was willing to ensure the project was adequately funded. One grey area in most projects is whether something is a new requirement, or was because the IT department did not understand the issues. In this project, this was irrelevant. The CIO guaranteed that any new costs would be covered by IT department funds. Fortunately for the CIO, the project team only required a small amount of money from IT department funds.

Cost overrun? [CIO] says, "If there's anything beyond the scope of the implementation, talk to me and [IT department] will help to absorb." If anything needs to be done I will talk to [CIO]. But I have not had the need. (IT Manager)

However, the CIO was uninterested in any risk that could be ascribed to non-IT sources. For example, he was uninterested in motivating users to provide requirements. Indeed, many of the IT functional leads (i.e., IT sub-project managers) didn't even see users to get requirements. Finance and Operations project members took up user liaison roles. In the below quote, "core team" refers to the Finance and Operations users who perform this liaison task.

I talk to the core team, who talk to the ground users from different departments. If there's any issue, I go to the core team. (IT Manager)

As seen from the above, this project presents evidence which mostly contradicts existing literature which emphasizes the importance of top management involvement, especially those at the pinnacle, i.e., the various chief executives. The project involved users from the IT, finance, and operations department, along with users from 17 other departments. However, only the heads of the IT, finance, and operations departments motivated their members to participate. The heads of the other 17 departments did nothing substantive. Indeed, as we show in "user participation" below, they would not release their employees full-time to the project. Individuals who were the superiors of the IT, finance, and operations department also did not intervene.

It should be noted that one aspect of top management support- resource provision was clearly catered for by the CIO (Loonam and McDonagh, 2005; Nah and Delgado, 2006; Parr and Shanks, 2000). However, other aspects of top management support, notably championship and participation were absent. No "senior executive" graced the project site. Even the CIO did not champion the project. He championed the IT function's role in the project.

The literature would predict that the lack of senior management championship would have doomed this project to failure. Dong (2008), for example, contrasts two implementations of HR-based enterprise systems in universities. The one championed by the HR director failed, while the one championed by the university president and provost succeeded. Implied in this is that the project champion must cross functional boundaries. In this project, the

Finance Director was strictly confined to one specific function and he did not enjoy the formal power to direct other departments. The literature remains silent with regards to middle management involvement. In this study, we observed that in lieu of top management support, the project team assumed responsibility to drive project progress.

There is also research that suggests champions need not have the formal power to cross functions to be champions (Petter, 2008; Subramanian and Lacity, 1997). It appears to be that such single-function champions have the charismatic ability to sway individuals across functional boundaries to work for the project (Beath, 1991). In our case, the Finance Director did not possess such charisma. Unfortunately, it is difficult to provide evidence for the absence of a skill or ability. The only way we can demonstrate this is by highlighting that user participation was minimal in the next section, "Clear Requirements."

User participation. It was incredibly difficult for the project team to solicit requirements from users outside of Finance. One reason for this was the lack of a sufficiently high-level project champion. Users came from separate departments, all of whom owed allegiance to different department heads. They had no incentive to agree with one other.

The user base comes from various departments, and it's difficult to get concurrence for specific issues. The user base is not focused. No doubt we have sessions to confirm design, but there are differing views and the solution is not finalized because their interests differ. (IT Manager)

Also, the department heads did not agree to release users full-time to the project.

The [nominated users] are nominated, but they're not full time. For most, this is a secondary appointment. We initially planned sitting space for them but no one came. User participation is a risk. (IT manager)

Thus, user participation was lower than required. For example, requirements gathering from non-Finance departments was generally difficult. In many cases, requirements were not obtained according to schedule.

[IT Manager A] and [IT Manager B] highlighted that the many [nominated users] did not come prepared for the [requirements] sessions with the "As-Is" processes. [Finance Project manager] wanted the [nominated users] to be reminded of the preparation work. (Minutes of meeting 26 April 2007)

When requirements were gathered, the quality was often wanting, mainly because users had no experience in providing requirements.

[It took] too long to fill in the templates. One is their work schedule. Some users are also made to fill in the forms without much of an idea of what's going on. So the quality of input needed a lot of review. (Consultant)

The above evidence deepens the paradox of project success and the need for user participation to help developers understand the requirements. In this project, user participation was lethargic and ad hoc, but the literature prescribes that users have to be full-time and participative (Domodaran, 1996; Parr and Shanks, 2000; Subramanian and Lacity, 1997; Wang, et al., 2008).

User Comfort With System. The CSF literature emphasizes training and change management (Aloini, et al., 2007; Biehl, 2007; Bradley, 2008; Grohowski, et al., 1990). However, in this project, both change management and training were outsourced, rather than being performed by business users as suggested by the literature (Paré and Jutras, 2004). Within the project, this was also an about-face. In prior projects, change management and training were done by "kingpins." Kingpins were individuals of influence within departments. The project team would convince kingpins of the necessity for change, mainly by involving them in the project. Kingpins would then convince their own departments of the need to change, and demonstrate how the changes would go. However, in this project, the project team assessed that users were not competent enough to assume the change management role.

If you tell people you are a kingpin, they say "[expletive], I don't know anything. So [nominated users] are kingpins but they don't think they are kingpins. If you get them out of their comfort zone, they will struggle. Then you tell them to do change management. They will struggle some more. Then got to train users, they will give up. (Finance project manager)

The Finance department decided to outsource both change management and training because they felt no one in the project team had these capabilities. The quote below is especially revealing, because a vendor supposedly understands the business better than the Finance and IT departments. In the quote, "scenario" is the term used to describe a high-level requirement similar to a use case.

I outsourced change management because [corporate IT] does not want to do it. I outsourced EUT [end-user-training] because we felt that we need someone who knows the business and understands why scenarios are done that way. I want a business answer. (Finance project manager)

As further irony, the company that change management was outsourced to also felt it was not very competent. It was selected principally on the grounds that this company had performed the initial requirements gathering and design.

[Corporate IT] thought they didn't have the skill sets. They are very technical. Change management is a different ball game. Also we wanted to try out change management. [Our company] is not known for change management. (Vendor representative)

Training and change management did not achieve their full potential. Only 71 percent of users who were supposed to be trained actually got trained. By inference, at least 29 percent of users were never convinced that the system was important. Users were not motivated to undergo training, despite multiple training opportunities.

[Finance Project Manager] requested [Finance Manager] to monitor the attendance for the [training] and [testing] closely and flag out those that have consistently missed out on both the [training] and [testing] sessions. These people will be barred from using [system]. (Minutes of meeting 31 Jan 2008)

Project Context

How did this project succeed despite the ambiguous manifestation of critical success factors? To understand this, we need to step back in time to understand the role of Finance in this logistics enterprise system and in the organization.

This company was unusual in that Finance was not considered a department of strategic importance. As a result, the company had a culture that downplayed the importance of accounting and cost control. Almost all accounting-trained personnel were housed in the Finance department. Accounting functions that had to be performed by other departments were assigned (sometimes randomly) to particular individuals as "secondary appointments." In the company, a secondary appointment was a job one had to do in addition to one's regular job. One could get punished for failing to perform a secondary appointment correctly. However, one could not get rewarded for doing a secondary appointment well.

For example, the AO [approving officer]. It is stretching finance appointment holders. Every time [Company] buys a good I must check whether I have funds. This person is a secondary appointment. He commits [company] to buying and puts us under financial obligations. It's very important. They must go through training before getting the appointment. But some just arrow.[1] *"Huh, what must I do?" This is supposed to have been trained in training but sometimes it's neglected.* (Finance Manager)

In other words, throughout the company, people without accounting backgrounds had to perform tedious accounting tasks they were ill-equipped to perform and were not rewarded for. From a project perspective, this meant that in many cases, failing to obtain requirements from particular users was not critical, because the user did not know their own job.

The feedback we gathered in the past is that they don't know their roles. You have such people in [company] environment. (IT Manager)

From an organizational perspective, the lack of people with accounting skills in the departments meant the company's accounting practices were poor. In the last five years, the company had twice failed audits by external auditors. The Finance department recognized that this was a problem and launched a campaign to improve accounting throughout the company while recognizing the inherent limitations of the organizational culture.

Finance saw the new logistics system as one way to solve its problems. The logistics system would incorporate a number of finance-related components such as purchasing and maintenance. Purchasing and maintenance were finance-related, because to obtain supplies such as paper or fuel, or to order a ship or repair jet engines, one needed money. Finance felt that it could influence the design of the system such that many financial checks done by

[1] A local term meaning to assign undesirable work. Literally, "to shoot an arrow at someone."

secondary appointment holders could be embedded in the system. This would simultaneously reduce the secondary appointment holder job scope, while increasing accounting accuracy.

However, the logistics system was only one of the projects Finance focused on. A completely independent project focused on lobbying the CEO to reorganize the company. The restructuring would not cause a loss of jobs. Instead, all accounting related functions of the various departments would be pooled under Finance, while logistics related functions would be pooled under Operations. Most individuals affected would relinquish their secondary appointments. A small number would join Finance or Operations, and assume their former secondary appointments as their new primary job. Thus, the departments would employ Finance and Operations as service providers to perform their accounting and operations functions. This reorganization significantly reduced the number of users from an initial 600 to 250 users.

There's less people doing procurement. The centralized unit is under [Operations], so whoever makes a purchase, they have to go through [Operations]. Even to purchase a pen. I cannot buy on my own. Yes, the people [handling procurement and finance in other departments] are transferred over. (Finance Manager)

The CEO approved the reorganization halfway through the implementation of the enterprise system for corporate HQ. Because users from various departments no longer performed Finance or Operations tasks, the project team no longer needed to gather requirements from them. Furthermore, many users from the various departments who performed specialized accounting or logistics functions were transferred to Finance or Operations. Because the Finance Director was now their boss, he could effectively pressure them. Note that while the person uttering the below quote belonged to Operations, the person served in a systems analysis role throughout the project (i.e., in the core team).

I saw all the [departments] in 1 month. In one week I go out and see 3-4 [departments]. To me, the reorganization is a relief. By the end of the visit, they told us there is a centralization (sic). I can talk to my one group. I was really happy…When it is centralized I have less work. To me, it is better. (Operations manager)

This is not to say the reorganization ran smoothly. It has also created new problems for the company. However, the reorganization and centralization meant Finance and Operations could focus inwards to mainly target Finance and Operations personnel to obtain requirements and complete the project. At this point, the project became very straightforward, because all project team members were very experienced. Several members had been involved in up to four prior, separate ES implementation projects- the design and implementation for the three B.U.s.

Also, because Finance and Operations rather than the departments were now handling all the processes, they could streamline processes as they saw fit. They defined the departments' Finance and Operations processes to be as simple as possible.

A lot of [Corporate HQ] buys are office supplies and general equipment. It interfaces with [other system]. Except for [R&D department], where they have a bit of spares. They buy through [this system] and part of it is through acquisition. The acquisition scenarios are [already] in [system]. (IT Manager)

Also, as this was the fifth logistics enterprise system project in so many years, the project had its own level of institutionalization. The enterprise system was already rolled out to the B.U.s, so people knew what the system was capable of, who benefited, and who had additional work to do as a result of the system. The need for project championship is reduced because the artifact of the enterprise system was already a reality. Users could ask friends in Operations how the system actually worked. Indeed, many users in Corporate HQ had held appointments in the business units before moving to their current positions. Thus, one reason change management had little impact was because users already knew how the project would affect them. Users who did not show up for training knew the new system would provide them little benefit, but would add to their workload. The benefit would accrue mainly to Finance.

Discussion and Conclusion

Our revelatory case contains two major tensions between the thesis of CSF theory and the antithesis of our empirical findings. First, our case presents a situation where it is difficult to argue for the presence of the three traditional CSFs, especially at project inception. Nevertheless, the project succeeded. Second, any attempt to reconcile these CSFs with the findings suggests that CSF research needs to improve its explanatory and predictive power. This section elaborates on the two tensions and provides a synthesis by surfacing the underlying CSF - legitimacy.

Thesis-Antithesis

Our data analysis section presented a situation where a multi-million dollar cross-organizational project had, at inception, almost non-existent levels of top management support and project championship, poor user participation, and problematic levels of change management and training. Nevertheless, this project succeeded. The weak presence of CSFs, coupled to clear evidence of project success invites further theorizing on established CSF theory.

One counterargument is the above description of weak CSFs misrepresents what actually occurred in the project. The Finance/Operations reorganization that occurred about halfway through the project demonstrated the presence of CSFs. Furthermore, while the CEO did not champion the enterprise system project, he championed the reorganization. Furthermore, after the reorganization, the Director of Finance, and Head of Operations had authority over most project team members. Hence top management support and project championship on the enterprise systems project became relevant after the reorganization. Similarly, after the reorganization, users became cooperative and provided relevant requirements. Users in Finance and Operations believed in the project and had used the system and hence were change managed and trained.

However, accepting the reorganization as a plausible CSF creates a problem for CSF theory because the reorganization was a serendipitous event occurring halfway through the project. To be specific, reorganization as a CSF presents a predicament for practice. To what extent can we expect instances of reorganization to be engineered in an organization as a means to improve project success, particularly when the true project champion, as suggested from our data, is a middle manager? If we argue that CSFs manifested partway through the project, then at what point in a project life cycle is it "too late" to introduce CSFs? The way each CSF manifested is also not the way project championship, user participation, and user acceptance normally manifest. While the CEO supported the reorganization, he never endorsed the implementation project. Similarly, users could only be said to have participated or been "change-managed," when 2/3rds of them were rendered irrelevant. Furthermore, we need to be mindful that in our case, the CEO supported the reorganization to streamline financial reporting. Enacting project success thus was a "happy" unintended consequence. Therefore, we need to make visible the conditions created by the serendipitous event of reorganization to understand what drives project success. In that way, we can generalize to other events, planned or unplanned, that may produce similar conditions to make a project succeed. We explore one such possibility when we reconcile the tensions between our data and current literature.

Synthesis

There are a number of ways to reconcile the discrepancies between CSF theory and our case. We highlight two options which we will reject in favor of a third choice. The first would be to claim our case was an aberrant one, and CSF theory still holds in the "general" situation. However, our case fits within the scope of CSF theory, which is supposed to work for all enterprise systems projects.

The second would be to claim that our case is a falsification of CSF theory (Popper, 1959). However, as Kuhn (1996) pointed out, a single situation that contradicts a theory does not cause a theory to lose favor. Paradigm shifts can only occur when a theory consistently fails a class of problems, and a better explanation is provided.

While we reject that a single counter-example is sufficient to jettison a theory, it can shake the confidence that the cumulative knowledge is unassailable and open the door to pursue more provoking questions. Hence, the more appropriate way to reconcile the discrepancy would be that our case adds a new data point to the mass of projects relevant to CSF theory. That it is an aberrant case necessitates a reflection on what is CSF theory, a revisiting of the accumulated evidence pertaining to it, and an adaptation of it in the spirit of normal science. In short, our case raises a paradox in CSF theory, which must be addressed by *extending CSF theory* to cover it (Poole and van de Ven, 1989; van den Berghe, 1973).

We extend CSF theory by shifting our perspective. To elaborate, such inconsistency in CSF research exists because we view CSFs from the perspective of the life-cycle motor. By moving to another motor (e.g., the dialectic motor), it becomes more evident that CSFs are context-dependent. In other words, success factors important for one project may be inapplicable in another. Unfortunately, CSF theory is strongly anchored in the life-cycle motor. That a factor is a success factor argues for a deterministic outcome. That a factor is critical suggests it is universal, and applicable to all contexts.

Poole and Van de Ven (1989) suggest that one way to resolve paradoxes is to consider them at different levels. We argue that why this inconsistency across the three considered CSF groups arises because what have previously been

identified as CSFs are indicators of CSFs rather than being CSFs themselves. In a cross-functional project context, top management support is best indicated when a cross-function champion, the CEO, exists. In a project localized to a single business function, the champion can be the head of that business function. Hence, there exist universal critical success factors. However, the things identified as critical success factors are not critical success factors in and of themselves, but are context-dependent indicators of the success factors.

Thus, something like top management support/project championship, user participation, and user acceptance are more appropriate as CSFs in-lieu of the hundreds of CSFs identified in the literature. If we accept this argument, there remains one outstanding issue. In our research, top management support/project championship, user participation, and user acceptance were poor constructs for explaining our findings. Thus, they cannot in and of themselves be CSFs.

We argue that the synthesis between critical success factors and our case is a latent construct that top management support/project championship, clear requirements, and user acceptance are reflections of – legitimacy. That one needs a "senior executive" to champion a project suggests that top management support/project championship is really a demonstration of legitimacy through authority.

Our case does not disprove that an enterprise system project must have authority (not necessarily from top management) to succeed. Rather, our case opens the door to consider authority in different ways. First, legitimacy bestowed by authority may not be exclusive to top management. In our case, the middle managers (e.g., Finance project manager) were the true project champions who drove the project. Consequently when reorganization took place, their familiarity with the project, coupled with experienced users solidified their legitimacy to push through the planned changes.

In addition, we also extend current CSF theorizing to adopt a more dynamic view of *where* "true" legitimacy lies. This view also solves the impasse in current literature of whether top management lies at the pinnacle or at the departmental level as it considers the project context to identify the "right" level of legitimacy. Legitimacy is also not static – vested in some fixed set of positions or roles. Other resources available to a project team or events can be capitalized on to obtain legitimacy. In our case, the serendipitous reorganization provides the occasion for the project team to gain legitimacy and hence engineer project success.

In addition, a project may succeed by gaining legitimacy from a different type of authority. Weber (1984) argues for three manifestations of authority – charismatic, rational-legal, and traditional authority. Temporally, charismatic authority emerges first. Once rules established by the charismatic authority are codified, rational-legal authority emerges. Over time, these rules become embedded in tradition.

Prior work on top management support and championship largely talk about charismatic champions, or champions that have rational-legal authority (e.g., the CEO). In our case, the project followed on the back of four years of successful related projects. The success of the project despite the absence of charismatic or rational-legal championship is thus partly explained by institutional inertia (i.e., tradition). Users who adopted the system knew how the system would benefit them. Users who did not participate (and were subsequently reorganized into irrelevance) were those who the system would not benefit.

Indeed, when project success is cast in the light of Weber's authority, it is easy to see other cases of enterprise systems where traditional authority holds sway. Most such cases are associated with escalation of commitment to failure. For example, the Taurus project was given funding even though the new CEO knew nothing about the project (Drummond, 1996). Traditional authority captured in the form of inertia ensured the Taurus project had "top management support."

Why does an enterprise system project need authority? Because authority confers that the project management team is legitimated to enact necessary changes to the organization that will arise as a result of system implementation.

Similarly, why does an enterprise system project need to encourage user participation? The best implementation of an enterprise system compels users to adapt to the system (Esteves and Pastor-Collado, 2001; Nah, et al., 2003; Remus, 2007; Soja, 2006; Somers and Nelson, 2001). Given that an enterprise system project is partly about bringing "best practices" into an organization, the "as is" processes are not the focus. The emphasis is on introducing and instituting the "to be" processes. One could argue that soliciting user participation might reveal the need to implement an enterprise system module that has previously been overlooked. Similarly, user participation in the form of gathering requirements helps the project team to determine which features of an enterprise system module should be configured. However, the implementation team can just as easily claim that a system not

configured to user satisfaction is representative of "best practice" and the "to be" processes. The gap between the user requirements and the need to work around are the result of the business processes being reengineered. Within this project, another potential excuse was the gap was created because of the need to standardize across Corporate HQ and the three business units.

So why should one gather user requirements in an enterprise system project? User requirements are gathered for two reasons. First, gathering such requirements builds rapport between users and the project team. By gathering requirements, the project team demonstrates that it cares about the user business. Second, by gathering requirements, the project team has information to convince users that change will be for the better. User processes can be diagrammed, and the diagrams can be shown to users to demonstrate inefficiencies in how they work. Similarly, one cannot argue that a gap is reflective of "best practice," unless one first knows what the user's original business process was. Thus, in enterprise systems projects, one function of user requirements gathering is legitimacy building. A caring, human face is put on the development team. Note that we do not argue that the only purpose of user requirement gathering is legitimacy.

In our case, legitimacy via user requirements could not be obtained, because users would not or could not give requirements. Instead, the reorganization legitimated the project by associating it only with individuals who would benefit from its use. The reorganization redistributed project responsibility from secondary appointment holders and assigned it to primary appointment holders. In other CSF research, the focus is on convincing users of the legitimacy of the project. In this case, the reorganization shifted onus for the project away from those who did not see the project as legitimate to those who did.

Finally, why is it important that users are comfortable with the system, and want to use it? More specifically, why are change management and training so important? Change management is fundamentally about convincing users of the value of change. Thus, successful change management is about ensuring that users accept the legitimacy of a project that will disrupt the status quo. Similarly, training assuages users that they can continue to perform their work by demonstrating how they will do their work. In this project, legitimacy was achieved not by convincing users that change was beneficial, but by restricting the user pool to those who already believed the project would be beneficial.

Thus, the synthesis of CSF research and our case study is that one underlying critical success factor for enterprise systems projects is the legitimacy of the proposed changes the enterprise system will enact on the organization. Within our case, the traditional CSFs did not explain project success, because legitimacy was obtained in a different way. However, regardless of how legitimacy is obtained, if the various organizational stakeholders accept the enterprise systems project as legitimate, the implementation will most likely succeed. If organizational stakeholders reject the change, either because there is no political will behind the project (top management support/championship), stakeholder will is not represented (user participation), or stakeholders do not understand or believe the change (change management/training), the project will be at risk. To clarify, these factors in and of themselves are insufficient for ensuring legitimacy. For example, a system with too many bugs or that executes too slowly runs a risk of losing its legitimacy. Similarly, a project also loses its legitimacy when it is excessively delayed and users begin to view it as vaporware.

References

Akkermans, H., and van Helden, K. "Vicious and Virtuous Cycles in ERP Implementation: A Case Study of Interrelations Between Critical Success Factors," *European Journal of Information Systems* (11:1), 2002, pp. 35-46.

Aloini, D., Dulmin, R., and Mininno, V. "Risk Management in ERP Project Introduction: Review of the Literature," *Information & Management* (44:6), 2007, pp. 547-567.

Beath, C.M. "Supporting the Information Technology Champion," *MIS Quarterly* (15:3), 1991, pp. 355-371.

Biehl, M. "Success Factors for Implementing Global Information Systems," *Communcations of the ACM* (50:1), 2007, pp. 53-58.

Bradley, J. "Management Based Critical Success Factors in the Implementation of Enterprise Resource Planning Systems," *International Journal of Accounting Information Systems* (9:3), 2008, pp. 175-200.

Bussen, W., and Myers, M.D. "Executive Information System Failure: A New Zealand Case Study," *Journal of Information Technology* (12:2), 1997, pp. 145-153.

Domodaran, L. "User Involvement in the Systems Design Process- A Practical Guide for Users," *Behaviour & Information Technology* (15:6), 1996, pp. 363-377.

Dong, L. "Exploring the Impact of Top Management Support of Enterprise Systems Implementations Outcomes: Two Cases," *Business Process Management Journal* (14:2), 2008, pp. 204-218.

Drummond, H. "The Politics of Risk: Trials and Tribulations of the Taurus Project," *Journal of Information Technology* (11:4), 1996, pp. 347-357.

Edmondson, A.C. "Framing For Learning: Lessons in Successful Technology Implementation," *California Management Review* (45:2), 2003, pp. 34-54.

Eisenhardt, K.M. "Building Theories from Case Study Research," *Academy of Management Review* (14:4), 1989, pp. 532-550.

Emery, J.C. "The Management Difference: A Tale of Two IS Projects," *MIS Quarterly* (14:1), 1990, pp. xi-xii.

Esteves, J., and Pastor-Collado, J. "Analysis of Critical Success Factors Relevance Along SAP Implementation Phases," *Proceedings of the Americas Conference on Information Systems*, 2001, pp. 1019-1025.

Golden-Biddle, K., and Locke, K. "Appealing Work: An Investigation of How Ethnographic Texts Convince," *Organization Science* (4:4), 1993, pp. 595-616.

Green, S.G. "Top Management Support of R&D Projects: A Strategic Leadership Perspective," *IEEE Transactions on Engineering Management* (42:3), 1995, pp. 223-232.

Grohowski, R., McGoff, C., Vogel, D., Martz, B., and Nunamaker, J. "Implementing Electronic Meeting Systems at IBM: Lessons Learned and Success Factors," *MIS Quarterly* (14:4), 1990, pp. 369-383.

Hegel, G.W.F. *Science of Logic*, Routledge, London, 1969.

Holland, C.P., and Light, B. "A Critical Success Factors Model for ERP Implementation," *IEEE Software* (16:3), 1999, pp. 30-36.

Kearns, G.S. "How the Internal Environment Impacts Information Systems Project Success: An Investigation of Exploitative and Explorative Firms," *Journal of Computer Information Systems* (48:1), 2007, pp. 63-75.

Klein, H.K., and Myers, M.D. "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly* (23:1), 1999, pp. 67-94.

Kuhn, T.S. *The Structure of Scientific Revolutions*, University of Chicago Press, 1996.

Lah, V.S., and Mahapatra, R.K. "Correlating Business Process Re-Engineering With the Information Systems Department," *International Journal of Product Research* (42:12), 2004, pp. 2357-2382.

Law, C.C.H., and Ngai, E.W.T. "ERP System Adoption: An Exploratory Study of the Organizational Factors and Impacts of ERP Success," *Information & Management* (44:4), 2007, pp. 418-432.

Levina, N., and Ross, J.W. "From the Vendor's Perspective: Exploring the Value Proposition in Information Technology Outsourcing," *MIS Quarterly* (27:3), 2003, pp. 331-364.

Loonam, J.A., and McDonagh, J. "Exploring Top Management Support for the Introduction of Enterprise Information Systems: A Literature Review," *The Irish Journal of Management* (26:1), 2005, pp. 163-178.

Mason, J. *Qualitative Researching*, Sage Publications, Thousand Oaks, CA, 1996.

Merton, R.K. "The Unanticipated Consequences of Purposive Social Action," *American Sociological Review* (1:6), 1936, pp. 894-904.

Nah, F., and Delgado, S. "Critical Success Factors for Enterprise Resource Planning Implementation and Upgrade," *Journal of Computer Information Systems* (46:5), 2006, pp. 99-113.

Nah, F.F.-H., Islam, Z., and Tan, M. "Empirical Assessment of Factors Influencing Success of Enterprise Resource Planning Implementations," *Journal of Database Management* (18:4), 2007, pp. 26-50.

Nah, F.F.-H., Zuckweiler, K.M., and Lau, J.L.-S. "ERP Implementation: Chief Information Officers' Perceptions of Critical Success Factors," *International Journal of Human-Computer Interaction* (16:1), 2003, pp. 5-22.

Ngai, E.W.T., Law, C.C.H., and Wat, F.K.T. "Examining the Critical Success Factors in the Adoption of Enterprise Resource Planning," *Computers in Industry* (59:6), 2008, pp. 548-564.

Paré, G., and Jutras, J.-F. "How Good is the IT Professional's Aptitude in the Conceptual Understanding of Change Management?" *Communications of the Association for Information Systems* (14:1), 2004, pp. 653-677.

Parr, A., and Shanks, G. "A Model of ERP Project Implementation," *Journal of Information Technology* (15:4), 2000, pp. 289-303.

Petter, S. "Managing User Expectations on Software Projects: Lessons From the Trenches," *International Journal of Project Management* (26:7), 2008, pp. 700-712.

Plant, R., and Willcocks, L. "Critical Success Factors in International ERP Implementations: A Case Research Approach," *Journal of Computer Information Systems* (47:3), 2007, pp. 60-70.

Poole, M.S., and van de Ven, A.H. "Using Paradox to Build Management and Organization Theories," *Academy of Management Review* (14:4), 1989, pp. 562-578.

Popper, K.R. *The Logic of Scientific Discovery*, Routledge, London, UK, 1959.

Remus, U. "Critical Success Factors for Implementing Enterprise Portals: A Comparison with ERP Implementations," *Business Process Management Journal* (13:4), 2007, pp. 538-552.

Robey, D., and Boudreau, M.-C. "Accounting for the Contradictory Organizational Consequences of Information Technology: Theoretical Directions and Methodological Implications," *Information Systems Research* (10:2), 1999, pp. 167-197.

Robey, D., Ross, J.W., and Boudreau, M.-C. "Learning to Implement Enterprise Systems: An Exploratory Study of the Dialectics of Change," *Journal of Management Information Systems* (19:1), 2002, pp. 17-46.

Sharma, R., and Yetton, P. "The Contingent Effects of Management Support and Task Interdependence on Successful Information
Systems Implementation," *MIS Quarterly* (27:4), 2003, pp. 533-555.

Soh, C., Sia, S.K., Boh, W.F., and Tang, M. "Misalignments in ERP Implementation: A Dialectic Perspective," *International Journal of Human Computer Interaction* (16:1), 2003, pp. 81-100.

Soja, P. "Success Factors in ERP Systems Implementations: Lessons From Practice," *Journal of Enterprise Information Management* (19:6), 2006, pp. 646-661.

Somers, T., and Nelson, K. "The Impact of Critical Success Factors Across the Stages of Enterprise Resource Planning Implementations," *Proceedings of the 34th Hawaii International Conference on Systems Science*, 2001, pp. 1-10.

Strauss, A.L., and Corbin, J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*, Sage Publications, 1990.

Subramanian, A., and Lacity, M.C. "Managing Client/Server Implementations: Today's Technology, Yesterday's Lessons," *Journal of Information Technology* (12:3), 1997, pp. 169-186.

Tucker, R.C. *The Marx-Engels Reader*, Oxford University Press, Oxford, UK, 1978.

van de Ven, A.H., Delbecq, A.L., and Koenig, R. "Determinants of Coordination Modes Within Organizations," *American Sociological Review* (41:2), 1976, pp. 322-338.

van de Ven, A.H., and Poole, M.S. "Explaining Development and Change in Organizations," *Academy of Management Review* (20:3), 1995, pp. 510-540.

van den Berghe, P.L. "Dialectic and Functionalism: Towards a Theoretical Synthesis," In *Sociological Readings in the Conflict Perspective*, W. J. Chambliss (ed.) Addison-Wesley, Reading MA, 1973, pp. 44-61.

Walsham, G. "Interpretive Case Studies in IS Research: Nature and Method," *European Journal of Information Systems* (4:2), 1995, pp. 74-81.

Wang, E.T.G., Shih, S.-P., Jiang, J.J., and Klein, G. "The Consistency Among Facilitating Factors and ERP Implementation Success: A Holistic View of Fit," *The Journal of Systems and Software* (81:9), 2008, pp. 1609-1621.

Weber, M. *From Max Weber: Essays in Sociology*, Routledge and Kegan Paul, London, 1984.

Willcocks, L.P., and Sykes, R. "The Role of the CIO and IT Function in ERP," *Communcations of the ACM* (43:4), 2000, pp. 32-38.

Young, R., and Jordan, E. "Top Management Support: Mantra or Necessity?" *International Journal of Project Management* (26:7), 2008, pp. 713-725.