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Research Article

Leveraging Social Capital to Obtain Top Management Support in Complex, Cross-Functional IT Projects

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Abstract

Research argues that a major reason for IT project failure is the lack of top management support. However, obtaining top management support is often considered outside the IT project team's control. In this paper, we investigate how IT project teams can obtain such support. We find that creating and mobilizing social capital through repeated interaction with top managers and their confidants helps a project obtain top management support. Also, a failure to use social capital to engage top management can cause a decrease in their support. We demonstrate these points through a natural experiment of the support of three division heads and their corresponding divisions in the implementation of an enterprise system. We demonstrate how and why top management support may be obtained by (1) building social capital and (2) mobilizing existing social capital—directly with top management or indirectly with individuals with influence on top management.

Keywords: *Top Management Support, Social Capital, IT Project, Project Management, Case Study.*

* Gary Klein was the accepting senior editor. This article was submitted on 14th January 2014 and went through three revisions.

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1. Introduction

Despite years of research and practice, IT project success remains an elusive goal. Only one third of IT projects succeed (Crear, 2009). And, even when projects do succeed, firms do not necessarily recoup their investment costs (Panorama Consulting, 2012). The literature has repeatedly emphasized that one critical factor in IT project success is top management support, which includes not only resourcing but also participation and involvement (Dong, Neufeld, & Higgins, 2009). Indeed, top management support may be the most important success factor in IT projects (Iacovou & Nakatsu, 2008).

Despite its obvious importance, large IT projects with low levels of top management support exist. The literature also suggests top management support is often outside an IT project manager's control (Schmidt, Lyytinen, Keil, & Cule, 2001). Current research on top management support has failed to articulate strategies to influence top management support for IT projects (Young & Jordan, 2008). Nevertheless, IT project teams need top management support for their projects to succeed. This creates a serious dilemma: how can an IT project succeed when a critical success factor is outside the project team's control?

In this paper, we address the question of how IT project teams can solicit support from top management. We explore the question through a qualitative natural experiment. Our research draws from the social capital literature to demonstrate the importance of project teams using social capital to influence top managers to gain support. We add to the theory of top management support by demonstrating how a project team can create and leverage its social capital to gain top management support. We propose a process and variance model that explains and predicts how social capital influences top management's motives (instrumental and social) to provide support for an IT project. Indeed, our research discovers that a failure to create and use social capital can reduce management support. Our research suggests project teams can obtain support by: (1) building social capital and (2) mobilizing existing social capital. That is, project team members can directly build and mobilize social capital with top management or indirectly build and mobilize social capital with individuals who can influence top management. Our research also contributes to the ERP literature. First, the study emphasizes the importance of continuity of relations between IT and functional areas, which challenges the conception of an ERP project as a temporary assignment (Elbanna, 2012; Engwall, 2003). Second, it partly clarifies the relationship between trust and control in influencing the behavior of top management (Das & Teng, 1998; Ghoshal & Moran, 1996). That is, trust does not contradict the use of control but helps (informally) to control top management's support for an IT project. Third, it makes explicit that ERP misalignment may arise in part because of a failure to develop a shared understanding of an ERP project (i.e., cognitive social capital) (Sia & Soh, 2007).

The paper proceeds as follows: in Section 2, we review literature in top management support and social capital to build a model of how project teams can obtain top management support. In Section 3, we describe our case methodology. In Section 4, we present our findings. In Section 5, we discuss our cross-case analysis, implications, and contributions to the ERP literature. Finally, in Section 6, we conclude the paper with limitations and avenues for further research.

2. Background Literature

Top management refers to those making strategic decisions that align an organization's internal structures and processes to its environment by setting precedents and committing resources (Carpenter, Geletkanycz, & Sanders, 2004; Pettigrew, 1992). Top management provides an interface between an organization and its environment and makes decisions likely to influence where the organization will head and how it gets there. Thus, top management plays a critical role in providing strategic context and guidance to organizations. For a big IT project, it is essential an interface between the project, which is a temporary organizational group, and routine functional operations be established so that the project can be accepted and receive support to achieve its desired benefits and goals (Elbanna, 2010).

Most research agrees that top management support is critical for project success (Akkermans & van Helden, 2002; Biehl, 2007). Substantial research has demonstrated that top management support is a direct predictor of project success (Liang, Saraf, Hu, & Xue, 2007; Thong, Yap, & Raman, 1996). Other studies suggest it is an interaction term that works with factors such as task interdependency, cross-functional versus within-function projects, and level of performance (Davenport, De Long, & Beers, 1998; Sharma & Yetton, 2003). Scholars have argued that top management support is most critical when a project is highly task interdependent and cross-functional because top management is required to facilitate decision making across groups (Bingi, Sharma, & Godla, 1999).

Some research even argues top management support is the most critical factor impacting IT project success (Iacovou & Nakatsu, 2008). Case studies have demonstrated failed IT projects linked to the absence of top management support (Sarker & Lee, 2003) and successful projects that feature top managers reinforcing other critical factors such as user participation and interdepartmental communication (Akkermans & van Helden, 2002).

An ERP project represents an instance of an IT project (Yin, 2003) for whose success top management support is critical. ERP projects are highly cross-functional and task interdependent. Scholars generally agree that continuous top management support is critical for successful ERP implementation (Akkermans & van Helden, 2002; Al-Mudimigh, Zairi, & Al-Mashari, 2001; Plant & Willcocks, 2007; Sarker & Lee, 2003). Indeed, some ERP studies have viewed top management support as the most important factor for project success (Bingi et al., 1999; Somers & Nelson, 2001).

ERP implementations are extremely complex and involve cross-functional stakeholders working with complicated architectures and modules in a lengthy implementation process (Aloini, Dulmin, & Mininno, 2007). They create tremendous changes in peoples' work, business processes, and organizational performance. For this reason, they are termed "technochange projects" (Markus, 2004). Because successful technochange projects require organizational members to both carefully implement IT solutions and properly adapt to the change, top managers must sponsor and champion such projects (Akkermans & van Helden, 2002; Westerman & Hunter, 2007; Yeow & Sia, 2008).

2.1. Obtaining Top Management Support

The literature generally suggests that top management support comprises three critical components: (1) resource provision, (2) participation, and (3) involvement (Dong et al., 2009):

- **Resource provision**: IT projects, especially enterprise IT projects, require resources in the form of money, personnel, and equipment. Top management is responsible for allocating funds, assigning personnel and equipment to a project, and building a context that facilitates the flow of resources (Parr & Shanks, 2000).

- **Participation**: the literature also argues top managers must be present for the entire project duration (Sarker & Lee, 2003). Top managers' presence and visibility are, thus, other important manifestations of their support. Top managers must set project goals (Nah, Zuckweiler, & Lau, 2003), help solve management problems (Young & Jordan, 2008), and repair dysfunctional organizational structures or processes (Sarker & Lee, 2003). Dong (2008), for example, argues one factor leading to successful implementation of a human resource information system was the university provost's periodic visit to the project site.

- **Involvement**: the literature further emphasizes that top management's participation must be sincere and effortful. Their psychological state (i.e., involvement) is critical to project success (Dong et al., 2009), and top management must demonstrate commitment (Parr & Shanks, 2000). Top management must express public, explicit, and sincere support and establish the project as the top priority (Nah, Islam, & Tan, 2007).

For a technochange project, such as an ERP implementation, the three components are necessary both to ensure the project completes and desired change in the organization occurs (Dong et al.,

2009). Unfortunately, while the literature emphasizes the importance of top management support and delineates things top management must do (i.e., provide resources and participate), it rarely discusses how an IT project manager or other non-management project member can obtain top management support if it is not forthcoming. Exceptions include Liu, Zhang, Keil, and Chen (2010) who suggest tangible deliverables give management a sense of what the project will ultimately provide and Elbanna (2012) who suggests the use of different reporting and communication tools to align top management with project interests.

Due to most top managers' non-IT backgrounds, they may poorly understand information technologies and an IT vision. Also, outcomes of prior IT projects influence top management's interest in and expectations of a current IT project. Past failures reduce the project team's credibility and pose a threat to working relationships, whereas past success improves relationships (Reich & Benbasat, 2000; Rockart, Earl, & Ross, 1996). Furthermore, other projects compete for top management's attention in the contemporary multiple-project environment (Elbanna, 2010, 2012). Indeed, the literature often argues one problem with top management support is that it is outside the project team's control (Schmidt et al., 2001).

2.2. Social Capital and Top Management Support

Behavioral control theory suggests one way top managers can be influenced to support a project is via social capital. The theory identifies the kinds of controls one must exert on others to get them to perform a desired task (Eisenhardt, 1989a; Kirsch, 1997). There are two basic control modes: formal control and informal control. Formal control leverages hierarchical power and authority to influence behaviors. Given the controlee's (top manager) high status and the controller's (project team) low status in an IT project, formal control is unlikely to be viable. In contrast, informal control relies on the controlee's internal characteristics (self-control) or social relationships (clan control) to influence the controller.

Recent research has demonstrated the strong relationship between social capital and clan control (Chua, Lim, Soh, & Sia, 2012; Kirsch, Ko, & Haney, 2010). Clans are homogenous groups in which members share and are regulated by common values, beliefs, and norms (Ouchi, 1979). Managers can be part of a clan if they work closely with its members (Kirsch, Sambamurthy, Ko, & Purvis, 2002), which suggests that one way a project team can influence top management is by using social capital to enact clan control on management. Social capital is "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network" (Nahapiet & Ghoshal, 1998, p. 243). These resources may include networks, norms, trust, or goodwill (Adler & Kwon, 2002) that facilitate coordination and cooperation (Putnam, 1993) and the brokerage of opportunities in a network (Burt, 1997). Social capital is typically a by-product arising from other activities; once created, it will benefit those who are part of the network (Coleman, 1990).

Building social capital requires concerted effort to strengthen three interrelated ties among members; namely, structural, relational, and cognitive ties (Nahapiet & Ghoshal, 1998). Structural ties refer to "the overall pattern of connections between actors" (Nahapiet & Ghoshal, 1998, p. 244). The connections provide channels for interacting and transmitting information, values, and behaviors. Structural ties "can be analyzed from the perspective of network ties, network configuration and network stability" (Inkpen & Tsang, 2005, p. 152). They are typically described in terms of frequency, centrality, density or stability. Structural ties may be physical or virtual. Physical colocation is argued to allow communication and interaction with the least information loss because social, symbolic, and non-verbal cues can be transmitted face-to-face (Shapiro, Furst, Spreitzer, & Von Glinow, 2002). Virtual structural ties, such as communication through emails, enhance and fill the communications void between formal meetings or informal face-to-face communications (Wellman, Haase, Witte, & Hampton, 2001). Structural ties provide opportunities for social capital to form and be used (Adler & Kwon, 2002). However, the mere existence of the connectivity created by structural ties provides no guarantee that resources in the network will be activated.

Cognitive ties are "those resources providing shared representations, interpretations, and systems of meaning among parties" (Nahapiet & Ghoshal, 1998, p. 244). These may include common language and code (e.g., terminology, jargon, or abbreviations) and shared narrative (e.g., story, metaphor, or analogy). For example, agreement on data attributes to be input into a system or a consensus on the role of IT in an organization (Chen, Mocker, Preston, & Teubner, 2010) are cognitive ties that preserve negotiated outcomes and limit potential interpretations. Even objects based on a shared syntax, such as information systems or design drawings, can provide a concrete means for developing and strengthening cognitive ties (Star & Griesemer, 1989). Kellogg, Orlikowski, and Yates (2006), for example, demonstrate how PowerPoint slides can serve as a boundary object around which members of different expertise communities contribute.

Relational ties concern the affective quality of structural connections (Bolino, Turnley, & Bloodgood, 2002). They are "those assets created and leveraged through relationships" (Nahapiet & Ghoshal, 1998, p. 244). While structural ties are about "the presence or absence of network ties between actors," relational ties concern whether the connections are characterized by such elements as "trust and trustworthiness (Fukuyama, 1995; Putnam, 1993), norms and sanctions (Coleman, 1990), obligations and expectations (Burt, 1992; Coleman, 1990; Granovetter, 1985; Mauss, 1954), and identity and identification (Hakansson & Snehota, 1995; Merton, 1968)" (Nahapiet & Ghoshal, 1998, p. 244). Trust concerns a willingness to be vulnerable to another party's action even with little knowledge about consequences (Mayer & Davis, 1999). Trust can be grounded on the confidence in another party's good intent and capability to act professionally, reliably, and in an open way (Mishra, 1996) or on interpersonal care and concern (McAllister, 1995). Researchers have argued that trust is the key component of social capital (Putnam, 1993). Norms are jointly negotiated rules for social behaviors (Sherif & Murphy, 1936). Norms can often help projects. For example, in at least one project, a norm of joint accountability helped bridge differences in distinct user groups (Chua et al., 2012). Obligations represent commitment to some activities in the future. They are expectations developed in personal relationships and operate as a credit slip that others can redeem (Coleman, 1990). Identification is the process by which individuals perceive oneness with or belongingness to a group (Ashforth & Mael, 1989). Relational ties develop through a history of interaction. They provide the motivation for people to help their contacts in the absence of immediate or guaranteed returns (Adler & Kwon, 2002). Therefore, relational ties can activate deeply embedded resources in a network. For example, school ties between organizational members can often facilitate support where rational arguments might not (Lee & Brinton, 1996); management consistently fulfilling promises (e.g., provide training) can induce employee commitment (e.g., voluntary overtime) (Robinson, Kraatz, & Rousseau, 1994).

All the three ties are systematically associated and inseparable (Nahapiet & Ghoshal, 1998). For example, dense network ties (structural ties) allow frequent exchange and interaction, which helps establish a common language (cognitive tie) and trusting relationships (relational tie) among project members. Similarly, trust (relational tie) requires there be a commonality of relationship, which, in turn, requires there be a communication link between the trusting parties (Karahanna & Preston, 2013).

Chua et al. (2012) argue that a project team can create clan control through building and mobilizing social capital. In their research, they develop clan control through a two-step process in which the project team first creates social capital by developing structural, cognitive, and relational ties and then mobilizes created social capital and uses it to achieve the project manager's ends. Mobilization does not distinguish between the three ties because they become intertwined in enacted practice. A specific instance of social capital may simultaneously represent a structural, cognitive, and relational tie (Nahapiet & Ghoshal, 1998).

We propose that, just as a project manager can build and mobilize social capital on a project team, an IT project team can build and mobilize social capital on top management. As social capital between the project team and top management grows, top managers are more likely to act and think like a member of the project team and provide support to the project. Figure 1 illustrates this. Thus, we propose:

Proposition 1: *The strength of an IT project team's social capital with top managers increases the likelihood that top managers will support the IT project team's project.*

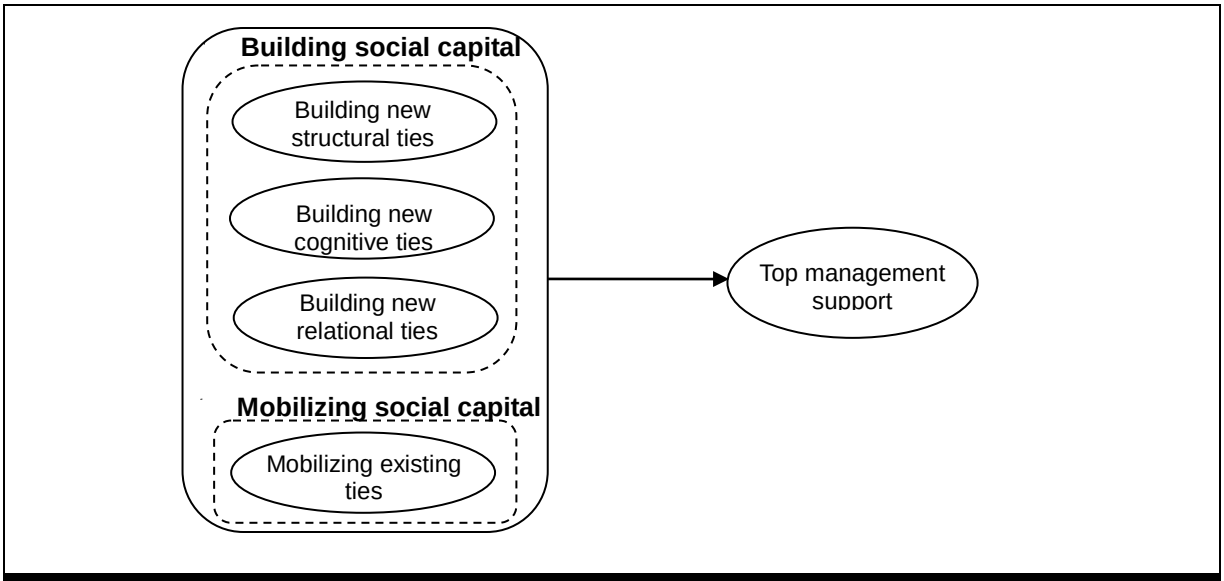

Figure 1. Proposed Model for Obtaining Top Management Support

3. Methodology

We performed a cross-case natural experiment of an ERP implementation in DesignCom (pseudonym), a leading semiconductor design house (Eisenhardt, 1989b; Yin, 2003). In our study, we compared the effect of differing levels of social capital between the IT team and three division heads on the support those heads gave for implementing the same ERP system's different modules.

3.1. Research Site

DesignCom is a spin-off from a large wafer manufacturer. At the time of study, it employed over one thousand employees worldwide and had sales revenue approaching USD$1 billion. DesignCom's culture exalted engineering and was characterized by an emphasis on scientific verification and respect for professional autonomy. Many top managers, including the CEO, had electronics/electrical engineering degrees and worked as engineers at some point. The engineering culture was endemic in DesignCom. Consider how, in the below example, the procurement division employed simulation as a tool:

> *Any plan, including backup, needs to be verified using all sorts of data. Simulation is very important for us. When an order comes in, you have to simulate, simulate, just simulate all possible scenarios. We have plenty of products, thousands. And the simulation can get very complex.* (Procurement manager)

DesignCom's organizational chart was relatively flat: it comprised a CEO, functional managers, and engineers/administrators. Sometimes, sub-functional heads existed between functional managers and engineers/administrators. For example, the procurement function included three sub-functions, with procurement administrators reporting to their sub-functional heads who reported to the functional manager who then reported to the CEO. Therefore, there were no more than two intervening levels between the CEO and frontline staff. Given the flat, decentralized structure and engineering culture, information and resource requests were routed to the most senior manager in each functional division, which enabled them to make strategic and managerial decisions that shape overall organizational activities. The ERP project was expected to impact functions of finance, sales and distribution,

manufacturing, and procurement. Heads of these functions reported directly to the CEO. Hence, for the purposes of this paper, we consider division heads as top management.

The operationalization of top management in the literature varies widely. Some identify top management as the CEO and people who report directly to the CEO (Carpenter & Fredrickson, 2001); some consider top management as top executives holding the senior-most offices (Geletkanycz & Black, 2001). Others identify top management as those involved in strategic decision making (Collins & Clark, 2003; Pettigrew, 1992). Our operationalization of top management is congruent with all these because DesignCom is a flat organization.

DesignCom inherited several distributed information systems from its parent, many of which the organization deemed unsuitable to support its explosive growth. The decentralized nature of the organization and out-of-date systems caused strain among employees:

> *Top management couldn't figure out where the inventory was or the inventory level. That is, they didn't have a real-time grasp of information. On the other hand, our business was expanding. Everyone was overworking because, without an integrated system, we could only coordinate manually…So it's really urgent to have an ERP. Every division felt the strain, and top management desperately needed real-time information* (IT team member).

Thus, the CEO initiated the ERP project partly to replace these aging, disparate systems and partly to centralize control of the once-distributed systems. DesignCom had never undertaken an organization-wide IT project before. The organization implemented a selection of core ERP modules at the headquarters to facilitate interdepartmental coordination and integration. In total, three core modules were implemented across six divisions (finance, sales, purchasing, product engineering, quality assurance, and IT divisions). The modules included finance (e.g., general ledger, account receivables, account payables), sales and distribution (e.g., order management, purchase order, customer credit check), and production (e.g., bill of material, work in process, outsourcing). The project was evaluated regularly during implementation and post implementation.

> *We held milestone meetings to evaluate the project about every four months. In total, three [milestone meetings where we]…checked the schedule, data, or budget… One year later, the project was expected to be evaluated for benefits it produced… The divisions presented benefits the system produced… We didn't set criteria for the [post-implementation] evaluation… They [the divisions] evaluated the project according to their own criteria.* (IT team member)

The ERP project (implementing Oracle E-Business Suite) was not the only IT project in DesignCom at the time, but it was the largest in terms of scale and cost. Other projects at that time included a product lifecycle-management system, a document-management system, and a quality-management system. The cost of implementing the ERP implementation was over USD$3 million (within budget), with over one hundred licenses purchased. The project ran about one month behind schedule because of unsatisfactory data quality from several suppliers. The organization enforced a policy post implementation to complete data integration within three months.

> *When they [suppliers] failed to follow our policy [for data attributes], we delayed the payment… We highlighted this policy forcefully the first month [after the implementation]…* (Procurement key user)

Given the problem with data quality was solved satisfactorily, the post-implementation evaluation report argued that the project was a success.

> *Mistakes were greatly reduced… Even no baton dropped when requests were passed from sales… We didn't have to argue with them to settle a dispute because the system had all the data.* (Product engineering user)

In contrast, the next largest project had a budget of approximately USD$50,000, which concerned implementing a product lifecycle-management system that the research and development division would use.

3.2. Data Collection

The first author entered the field site from January to December 2011 to collect retrospective data on the implementation, which lasted 15 months from February 2006 to May 2007. The events studied cover the whole implementation. Access to the field site was granted by the organization's chief financial officer, a member of the project steering committee. The first author collected data through three principal channels, (1) semi-structured interviews, (2) internal company documentation, and (3) on-site observation of users using information systems. The first author also took field notes to record observations (e.g., physical workplace arrangement, informal conversations before and after the interview) (Dubé & Paré, 2003). Table 1 shows the breakdown of data sources, which includes 22 semi-structured interviews with project stakeholders and such documents as meeting minutes, user wish lists, magazine reports, training manuals, and snapshots taken at the premises.

Table 1. Breakdown of Data Sources

Documents		
Minutes of meetings including the kickoff and milestone review meetings		
User wish lists		
Magazine reports about the implementation		
ERP training manuals		
Snapshots of users' electronic working environments (ERP and non-ERP)		
Interviews		
Stakeholders	# of interviews	# of distinct interviewees
Finance representatives (including CFO)	6	3
Procurement representatives (including the then COO)	3	3
Product engineering representatives	3	3
IT (including IT project manager)	7	4
Consultants	3	2
Total	**22**	**15**

The first author first queried three knowledgeable IT members (IT project manager and his two assistants) about all divisions affected by the implementation. Three divisions (finance, procurement, and product engineering) varied along the dimension of the levels of initial and final support for the project provided by their division heads. As data collection proceeded, the first author discovered a systematic variation between the levels of social capital the IT team used and top management support. This allowed us to frame our cross-case analysis as a natural experiment. A natural experiment occurs when subjects are exposed to treatment/control/comparison conditions through nature or other factors outside the control of investigators. However, the process governing exposure arguably resembles an intervention by researchers (Lee, 1989).

Table 2 presents the variations in top management support (both initial and final) and the level of social capital used. As Table 2 reveals, we note distinct levels of initial top management support (high and low) and variations in the level of support across time—the product engineering manager who initially rejected the project became a supporter. In both the procurement and finance cases, levels of support remain constant throughout the cases (low for procurement, and high for finance). Thus, the finance case serves as a literal replication (i.e., similar results), whereas the procurement case is a theoretical replication (i.e., contrasting results) of the product engineering case (Yin, 2003).

Table 2. Case Site Selection			
	Initial support	**Social capital used**	**Final support**
Procurement	Low	Low	Low
Product engineering	Low	High	High
Finance	High	High	High

We selected interviewees based on principles that Huber and Power (1985) suggest. Our interviewees came from a wide variety of different roles (IT personnel, key users, end users, and consultants) and levels (managerial and non-management). We sampled multiple individuals from each division, and representatives from the broader IT project team (i.e., internal IT members and consultants). However, consultants played a principally supporting role, and, hence, we do not discuss them in this paper.

> *We were there for only three months…helping IT refine users' wish lists and demonstrate system details to users.* (Consultant)

Both the procurement and finance managers were on the steering committee, with the CEO assuming the role of project director. Although the CEO "generally agreed with the premise [to implement an ERP]" (IT project manager), he did not materially participate. After attending the kickoff and the first milestone meeting five months later, the CEO left the implementation task completely to the divisions and the project team.

> *[The CEO] didn't vote [for software packages]… The CEO wouldn't enforce his opinions when he didn't participate in discussion or the decision process.* (IT project manager)

During interviews, we first asked questions about interviewees' position and role and how their roles fitted in the overall organizational context. We then asked questions about the process of the ERP project from a project management perspective. Such questions focused on the planning, decision making, coordination, and problem-resolution processes in the ERP project. We next moved to specific questions about IT engagement and provision of top management support. Such questions included those on the time, resources, and effort the IT group spent on talking to, working with, and responding to top management and users about particular events or issues. Questions about top management support revolved around the resources (time, money, equipment, personnel) top management provided and their attitudes and behaviors towards the ERP project. We asked about how support from the IT project team impacted the organization and their specific divisions.

After interviews, we often asked users to demonstrate the system in their work context. An understanding of human behavior often requires an appreciation of context (Meyer, 1992). The demonstration helped us understand project issues the divisions encountered. We also carried out email exchanges with interviewees to obtain further clarification. We scheduled follow-up interviews when new questions arose after reviewing the transcripts or after speaking with other interviewees. Interviews lasted between one and two hours and most were recorded and transcribed verbatim. Several interviewees provided feedback on preliminary case narratives and provided supplementary documents for further analysis.

3.3. Data Analysis

In each case, we focused on coding two constructs, (1) top management support (both initial and final) and (2) social capital built by the project team. We rated top management support (both initial and final) as high if top management voiced public support for the implementation, worked with the project team, and allocated dedicated resources to increase the chance of implementation success. We rated it as low if top management voiced hostility to the implementation and refused to provide material resources or intentionally assigned obviously unqualified and insufficient resources.

We explored how the IT project team (i.e., project team members who were IT members) influenced top management. We developed coding guidelines for social capital built by the IT project team. We considered something as evidence of a structural tie if it increased physical or psychological proximity between the project team and top management. We considered communication channels (e.g., meetings or user representative's reporting to management) and electronic tools (e.g., emails) to facilitate structural ties if they enhanced perceived proximity. For example, an IT project team member proposed to work with the head of the product engineering division in a meeting room outside of work hours, and we considered this physically co-located meeting as evidence of a structural tie. Absence of a structural tie would be demonstrated in the evidence of no meetings, an absence at meetings, or the lack of communication channels, whether formal or informal.

Cognitive ties bridge different perspectives and mindsets. We coded something as having a cognitive tie if it had a shared language or narrative component. We also considered objects such as user wish lists and training manuals as evidence of cognitive ties, especially if they helped reconcile different viewpoints. For example, we considered a training manual as evidence of a cognitive tie between IT and users if it was understandable and usable. We considered something as a lack of a cognitive tie if it demonstrated lack of a shared language. For example, we considered a divisional list of requirements that was in a form the IT team could not process as evidence that cognitive ties had not been established.

Activities for building relational ties increase the breadth and depth of interaction. We employed evidence of formal and informal bonding activities in and outside the current work context that led to interpersonal liking, trust, or identification with the project team as demonstrations of relational ties. For example, a project team member often went for coffee breaks with a division head and other users. Relational ties involve intimate and personal interaction with one's contacts. When coding evidence of relational ties, we looked for evidence of top managers' liking of, trust in, or identification or shared norms with the IT team.

In addition to building new ties, the IT project team would mobilize existing ties developed from prior encounters (e.g., previous failed or successful projects) or similar backgrounds (e.g., classmates, alumni). Therefore, we checked whether prior common experiences or similar backgrounds encouraged meeting, communicating, and interacting with top managers (structural tie), improved commonality in perspectives (cognitive tie), or made top managers like or trust the IT team (relational tie). For example, a problem-solving practice established from prior projects that required IT to inform top management would increase interaction (structural tie). Bias against software packages developed prior to the ERP project would inhibit shared understanding (cognitive tie) and a failed prior project ridden with interpersonal conflicts would induce dislike and mistrust (relational tie).

The three ties are highly interrelated and can occur simultaneously (Nahapiet & Ghoshal, 1998). Thus, a particular example may simultaneously represent structural, cognitive, and/or relational ties. For example, that top management showed up in many meetings and publicly praised the IT team as their strategic partner during meetings represents both structural and relational ties. For ease of explanation and in accordance with how other research analyzes social capital, we highlight the tie most directly related to a particular activity (Chua et al., 2012). As such, while we code the aforementioned example as both structural and relational ties, we present it as a relational tie because it highlights top management's liking and trust in the team.

We also assessed project performance and gathered evidence on interim and final deliverables and achieved deadlines. For example, we considered interim performance in the procurement division as poor because both the project team and the user representative mentioned delays in the schedule and poor data quality.

4. Findings

We use the concepts of top management support, social capital, and project performance to analyze the case. We focus on social capital built with top management and users in each division because

efforts to build ties with users can indirectly raise an IT team's overall connectivity and aggregate social capital with top management (Nahapiet & Ghoshal, 1998). Managers communicate regularly with users about work either through formal reporting structures or informally (Cross & Prusak, 2002; Mom, Van Den Bosch, & Volberda, 2007). Information users pass to management about a project team can shape management's relationship with the project team. Table 3 provides examples of social capital used in the three divisions. In this section, we describe how social capital contributed to top management support for an IT project.

Table 3. Social Capital Used in Each Division

Procurement division

Tie	Example	Quote
Structural ties	Manager attended few meetings	*The [procurement] manager didn't show up for important meetings until the very late stage when many problems broke out.* (IT team member)
	Inexperienced key user as a bridge between IT and management	*Several senior staff didn't buy in to what she [the key user] said. She should have talked to her boss and asked him to support the project. There's nothing I could do about it.* (IT team member)
Cognitive ties	IT project team did not listen and criticized local practices	*The IT team kept rejecting our requests because they didn't want to change the system… They insisted on their stance. They should have adapted or transformed the system to our needs.* (Procurement user)
	Deliverables were not comprehensible to the group they were delivered to	*The project didn't make sense… We told IT what we wanted. But, instead of our getting that, the process became even more complex.* (Procurement manager)
Relational ties	Past failure implementation created mistrust	*Before this [project], we wanted another system. It failed… The point was whether IT put in effort… They had so may projects going on [along with the ERP project]. Of course, they would want to achieve their goals, sometimes at the sacrifice of others.* (Procurement Manager)
	Interpersonal conflicts and negative emotions of frustration and anxiety	*Everyone complained… We tried to find out who were to be blamed. The IT people, the issue owner [key user], or just poor communication*. (Procurement user)

Table 3. Social Capital Used in Each Division (Cont.)		
Product engineering division		
Structural ties	Physical collocation of the project team and top management	*I worked with [an IT member] in a room like this [interview room] after work...conceiving the whole concept of PIM. We are the initiators of PIM.* (Product engineering manager)
Cognitive ties	Agreements sought and crystalized in a new system module	*[They] came out with specs of PIM and decided PIM would be developed independently and fed data into the ERP… [They] also discussed extended functions of PIM.* (IT team member)
Relational ties	Shared eventful experiences prompted emotional bridges	*It's after mid-April that year. I felt severe pain… I had worked very hard with the manager for quite a period… We fought together, developed deep comradeship after all these.* (IT team member)
	Made reference to common affiliation to elite schools to induce interpersonal liking	*Some of them [engineers] are my high school or university classmates. I often bought them coffee and asked for their help… I was really counting on those connections and asking for their help as a friend.* (IT team member)
Finance division		
Structural ties	Manager attended important meetings	[I] *attended meetings to quickly get important issues and responded to them [the IT team].* (Finance manager)
	Experienced key user as a bridge between IT and management	*We had those departmental meetings [where] the key user debriefed us about important meetings, summarizing information for us... [The key user] has been here for long, and knows people and processes so well.* (Finance user)
Cognitive ties	Frequent discussion with the IT team and information sharing with the division	*We understood there were inherent restrictions of packaged software. But the IT people designed many extended reports to meet our requirements. It's great… We just followed IT people's lead. They were very competent.* (Finance user)
Relational ties	Previous successful projects built IT credibility	*…many successful experiences in the past, they're good at coordinating projects. So I expected them to help us with the ERP.* (Finance manager)
	Individuals had important social roles that facilitated relationship building	*The project brought stress to everyone and each of them* [users] *reacted differently. I chatted with them individually…shared with them some words of wisdom. (IT team member)*

4.1. Procurement Division

4.1.1. Initial Management Support

One year prior to the ERP implementation, the procurement division had attempted (but failed) to introduce an unrelated software package into the division. As a result, the procurement division was generally skeptical of packaged software:

> *The lesson we learned is that software packages bring constraints, not convenience.* (Procurement division user)

Nevertheless, the procurement manager and the rest of his division felt the project would provide certain (restricted) benefits to the division. He felt the system would help the division with its routine work. However, he perceived the system would be inadequate for managing the more complex procurement processes. After exchanges with technical experts during the ERP demonstrations, users were very aware of system constraints and felt their legacy systems helped with their complex processes more than the ERP system would:

> *We would execute routine jobs on the ERP, but we didn't expect the ERP* [to be useful] *for planning or forecasting. The ERP would be only suitable for routine jobs, like opening, accessing or maintaining purchase orders. For those volatile jobs, we would have to get them done on other systems.* (Procurement division user)

Publicly, the manager supported the project. He agreed that the procurement division would be a part of the project and anticipated that the system would produce (limited) benefits:

> *The old systems were having problems with immediacy and accuracy… I wanted to see what the system [ERP] could do for us… The projection was rough and I knew at that time nothing was firm.* (Procurement manager)

However, resourcing and support provision was low. The manager assigned a junior, inexperienced employee full-time to manage the ERP implementation (the key user). The manager also informed other users that the implementation was not to interrupt their regular routines. As procurement users were not relieved of their regular work, they left the whole implementation job to the key user:

> *It's very possible that they* [users] *would feel the conflict during the implementation, but what's more important for us was the use of the system, not its implementation.* (Procurement manager)

4.1.2. Social Capital

Building structural ties: the procurement manager was absent from almost all operational project meetings and did not engage with the IT team. Therefore, the IT team solely relied on the key user to influence the manager:

> *The key user was the only person to collect and relay our requirements.* (Procurement user)

Because the procurement manager did not relieve users of their regular responsibilities, users only attended training events occasionally and gave few requirements. The key user collected requirements and promoted training, but, given this person's junior status and procurement users' workloads, people generally did not pay attention to her. Hence, only trivial, operational information about the ERP system was transferred, and the procurement division did not understand essential information about project goals and vision:

> *We occasionally attended training. They told us something like 'push this button and then go to a certain page. If nothing shows up, then go back to the previous page'. It's pretty operational.* (Procurement user)

Building cognitive ties: users' poor attendance at requirements gathering and training events meant they had a poor understanding of what the project was about. Therefore, previously developed perceptions about generic software packages, such as "lack of flexibility" and "can only play by the vendor's rules of the game" (Procurement user), persisted. Despite these problems, the IT team did not do anything to encourage greater participation by the procurement users. Even worse, an IT team member's poor communication skills inhibited mutual understanding. He used his procurement knowledge to judge users' on-the-ground practices and failed to appreciate the context of procurement within the organization:

> *In fact, the IT guy I worked with was a certified procurement specialist, passed an exam and was certified by some research institute. He criticized our processes and argued that our processes were wrong… He's too subjective to listen to us.* (Procurement key user)

To facilitate requirements gathering, the project team devised a template. The key user compiled a divisional wish list mainly based on users' email replies:

> *For those available to talk with me, I asked for their priorities. But I didn't really follow their opinions. The finalized list was based on my evaluation.* (Procurement key user)

In total, users identified 23 general requirements. The requirements list was sketchy, poorly organized, did not rate requirements as critical, important, or of low severity, and was phrased in a way that did not easily map into features of the ERP system. For example, one item read "need a supplier portal".

The poorly phrased requirements created problems in the project. For example, at the behest of some senior users, the key user requested the ability to freely query the database. The project team rejected this request on the grounds that it might impact security and data integrity. What the procurement division wanted was the ability to export data from the ERP system to manage complex processes. However, the key user did not clearly define the data views/cubes she needed to do this work, and, thus, these features were not implemented.

Procurement users found the system difficult to use because they had attended minimal training sessions and because they had not participated in drafting the training manual. The training manual had been drafted solely by the key user, who, due to her lack of experience in the task, did not do a good job:

> *The training manual was in the form of slides. I copied and pasted several screenshots with not many details…only focused on the big pictures. The manual didn't deal with anomalies. Users were supposed to do this themselves, but they didn't.* (Procurement key user)

Building relational ties: the procurement division had been previously involved in a failed software project. The failure created mistrust in IT's intent and capability:

> *The boss made [the previously failed software project] the top priority for that year, but that project went totally awry… I reprimanded [the IT people] for the lousy job they've done…publicly and in emails, lots of exchanges of abusive language.* (Procurement user)

However, this lack of trust was not addressed. The project team did not probe users' needs and thought users were just being difficult and afraid of change. Mistrust in IT's intent and capability thus deepened:

> *They complained about why there were such and such constraints, like filling up forms or the presence of system controls. They felt the system was causing them trouble… There's always this kind of people. They just couldn't change their mindset.* (IT team member)

> *We didn't understand the technology. When we told them what we needed, they should have done what was in our interest… [The project] would risk our flexibility… The team had to deal with it…it wasn't that difficult at all.* (Procurement manager)

Frustration grew among users, who worried that the inflexible system would decrease their work efficiency:

> *…our business exploded and we're under a lot of pressure from the customers and our frontline people [sales persons]. Any mistake would cost us dearly… With the system not adapted [to our processes], we were handicapped*. (Procurement user)

The key user exhorted the procurement users to do more work, but people generally ignored her and the manager left her to handle this alone. She complained to the IT project team of the lack of participation by her division. As a result, users treated the key user as a spy: they viewed her as someone who reported their non-participation to management rather than as someone trying to facilitate change. Tensions arising as a result of the ERP implementation came to a head when an email flame war started between an employee favored by the manager and the key user. The flame war arose because the key user kept highlighting the employee's absence from project training events. All other parties, including the division manager, did not participate in the public exchange:

> *Every once in a while, I summarized and reported how many times people skipped training… That guy replied to all, to all those in my email loop, and asked whether I had intended to highlight his absence and embarrass him… He argued I had no right to review his performance.* (Procurement key user)

> *After the event, the key user refrained from pushing user participation. Division between junior and senior staff was clearly demarcated, with each group describing the opposite side as "strange", "incomprehensible", and "unapproachable"* (Procurement key user).

4.1.3. Final Management Support

The divisional manager accused the IT group of managing the project poorly, which created interpersonal tension and conflicts:

> *They [IT team] did a poor projection, totally wrong planning of the workforce… This [wrong projection] caused extreme tension, many interpersonal problems… Naturally things weren't getting done well*. (Procurement manager)

When users were later asked to verify system specifications and prepare for user testing, the manager publicly complained that the verification and preparation consumed too much time and considered it "not acceptable" since daily work would be compromised:

> *The boss [divisional manager]…kept emphasizing the no glitch standard [for our regular jobs].* (Procurement user)

4.1.4. Project Performance

In the end, the IT team decided to delay the project for one month because of unsatisfactory data quality. The delay did not help address the issues the procurement manager and users raised such as perceived system constraints. After go-live, the procurement manager remained skeptical about the system:

> *[The manager] didn't think the system had addressed the key issues… At our annual performance interview the same year, the manager said that he knew I worked very hard, but the jury was still out on this project. He doubted whether the system would ever help increase our revenues.* (Procurement key user)

4.2. Product Engineering Division

4.2.1. Initial Top Management Support

Product engineers' participation was essential because they were required to feed product information into the ERP. However, the engineers, including the divisional manager, were generally skeptical about the system's value. They considered the system as irrelevant and tangential to their work:

> *It's, at most, a small tool to us. So we didn't have any expectation about it*. (Product engineering user)

Since there was only one new system function to be implemented at this division, the divisional manager felt he could allocate just one user to the job part-time. However, all the users he invited declined. The manager then assumed the role himself to "help the IT people". The nature of the divisional manager's routine work required him to be at various factory sites. Thus, his involvement with the ERP project could only be scheduled during after-work hours.

The manager was the only member of the division who attended an ERP demonstration. During the demonstration, he publicly criticized the system as "complicated", "difficult", and "unfriendly". He anticipated no benefits from implementing the ERP at the division:

> *When seeing the demonstration, [I] rejected it immediately. The system was impossible. Very difficult to use. Lots of attributes scrambling on the interface; not friendly at all.* (Product engineering key user/ Product engineering manager)

The manager also did not anticipate the project to change their work and refused to seek common ground.

> *[I] showed them [the IT team] the way we did things and told them that's how we wanted the system to get done... I told them to do it our way. It's impossible to change our processes.* (Product engineering key user/ Product engineering manager)

The product engineering division initially refused to participate in data migration:

> *There was no way we could acquire the [conversion] skill. We had 50 people here. It was totally impossible.* (Product engineering user)

4.2.2. Social Capital

Building structural ties: because of the product engineering division's resistance, the IT team agreed to make changes to the implementation plan. An experienced IT employee was assigned to work closely with the divisional manager outside of official work hours to discuss a new implementation plan. These changes included developing a new module for entering product data and simplifying the data-entry process:

> *I worked in a meeting room with [the division manager] after work… [During the apex of the project], I often worked until 2 or 3am and then came back before 8 the next morning.* (IT team member)

Building cognitive ties: the product engineering division suffered from internal problems associated with incorrect identification of production models and numbers because product data was separately documented by each engineer and scattered in distributed systems and because the lack of integrated data prohibited effective interdivisional communication. The IT team highlighted the ERP system could resolve this issue, but an additional ERP module would need to be implemented. The key user/divisional manager and IT employee discussed and reached agreement on an implementation plan:

> *I discussed with [the divisional manager] about data attributes to be input into the [new module]… [I] also discussed about [module] specs, such as what functions should be included… The agreement was that we had to develop and maintain the [module] and the [product engineering] division would take charge of data entry.* (IT team member)

As a result of the agreement, a new module, known as "PIM", was developed. PIM streamlined the data-entry task by reducing the number of screens users had to navigate and the number of logins users required. Data input in PIM included about 50 attributes for each product for representation and

communication between divisions. Data in PIM was fed into not only the ERP but also other workflow systems in use.

Building relational ties: the divisional manager and IT employee developed a very close working relationship; they even came back on a public holiday to work on the project. That day was particularly eventful because the IT employee suffered a sudden illness while working. Stories about the event were spread and the event became a symbol of partnership between the division and IT:

> *…I had a vivid impression of that day. It's a national holiday but we were still working. [The IT employee] almost got a heart attack. I tried to give him a massage. He'd been overworked for too long… This is how we'd developed comradeship.* (Product engineering manager)

The IT employee did other things to engage people in the product engineering division. For example, he attempted to induce interpersonal liking by making reference to their common affiliation to an elite university and high school and actively socializing with the engineers and manager, such as having coffee breaks together. The common affiliation induced confidence because the university was known for the caliber of their graduates:

> *We're called the technology class... Most of our engineers graduate from the two best local universities… [The IT member and another member] from [one of the universities], were handpicked to run this project…I joined [DesignCom] since my graduation from [the same university].* (Product engineering manager)

4.2.3. Final Top Management Support

As a result of the interaction between the IT employee and division manager, the division manager began to appreciate how the new ERP system would help both the product engineering division and the company as a whole. One of the main benefits to the product engineering division would be decreasing production mistakes:

> [*Sales division] used to phone us to produce, like 100 pieces of [a product], when we happened to be in the middle of our lunch break or in the factories. So we occasionally misremembered or misunderstood things. Or it could be that they told us wrong… Sales representatives would have to key in their requests…so this [system] was how we're going to deal with this issue.* (Product engineering manager)

The divisional manager also helped describe the benefits of the system in ways other top managers could visualize. His engineering background helped him articulate numbers and scenarios and disseminate them clearly during meetings with other top managers:

> *I did some statistics and reported these to the CEO... If people were well trained and processed data correctly, say at 99.9% with 5000 transactions through 8 production stations, we still made 40 mistakes a year.* (Product engineering manager)

The division manager, who considered the quality of product data his responsibility, provided training:

> *To maintain consistency of product data, I trained [engineering] users. I also trained key users [from other divisions]...it now becomes part of our orientation for all newcomers, held four times a year.* (Product engineering manager)

4.2.4. Project Performance

The divisional manager's positive feedback began to change the division's perceptions of the system. With the system, the information was integrated in a single place. The users perceived the integrated data to be useful and expected the data to reduce interdivisional disputes and increase efficiency of their work:

> *There used to be many disputes. This was because we didn't manage [product data] well… Sales had their own way in describing the product and we had our own. So did the finance people. Everyone spoke their own languages… The [ERP] unified the language.* (Product engineering user)

The strong support of the divisional manager and IT project team also meant the division felt they were well supported in the implementation. The engineers felt they had substantial discretion over the workload, implementation outcome, and complexity of the project. By the end of the project, users willingly entered data into the ERP system after work hours for about one month. The extra work hours created stress. The engineers joked about their condition as "a man without life" but were willing to do it within the deadline:

> *The whole division spent night after night together. It's tough in the beginning… We playfully called ourselves a man without life. The situation lasted for about one month. But it's the consensus… Everyone agreed to do it, and did it step by step.* (Product engineering user)

4.3. Finance Division

4.3.1. Initial Management Support

The finance division was among the most excited about the implementation because DesignCom had few general administrative systems. The finance divisions' users anticipated the new ERP system would save them from "chronic overwork" and "backbreaking data entry" because they would no longer have to rekey information obtained from other divisions. However, the finance division users felt they had little knowledge of information systems. They also were concerned about the quality of data originating from other divisions.

Given these issues, the manager considered the ERP implementation important and assigned the second-most senior person at the division as a full-time key user to facilitate the implementation and change. The key user was relieved of her mundane divisional duties and allowed to focus full-time on the ERP implementation.

The finance manager provided the division with substantial resources to support the implementation. For example, each user involved with the project team was allocated a deputy to cover their routine work while they worked on the project:

> *[The division manager] had a very good sense of the implementation job. He believed that we needed to have a deputy or a SOP for our daily job… With this document [the SOP], when something happened, we could help each other.* (Finance user)

The finance manager attended important meetings, including the kickoff and major milestone meetings. He often publicly praised the implementation team and encouraged users to participate in training and the implementation.

4.3.2. Social Capital

Building structural ties: the IT team were perceived to be "always there" (finance user) and engaged in activities that were in the interest of users. When problems involving other divisions occurred, they proactively arranged meetings for discussion and informed the manager through email and occasionally by phone. Informing the manager about cross-divisional disputes was a problem-solving practice developed from prior project experiences to deal with some "difficult" divisions or stakeholders (Finance manager). The manager appeared in several meetings and sent those involved to the meetings:

> *[An IT member] would call a meeting and find all stakeholders. [Finance manager] attended almost all meetings related to our division*. (Finance key user)

The key user served as a bridge between IT and users by constantly informing the manager and users of the project status and asking for their opinions when a decision was going to affect them:

> *[The key user] was the [second] most senior from the finance division, but she didn't make decisions arbitrarily. She was not that kind of person who enforced her opinions on others… The principle was that we wouldn't override users.* (IT team member)

Building cognitive ties: the IT team worked closely with the finance division to ensure requirements were met. For requirements that the ERP could not support, the IT team analyzed and explained why the requirements could not be implemented. Technical experts were assigned full time to the division. The financial division often sought (and listened to) technical advice. Information about the implementation was provided to the manager who developed an understanding about inherent constraints of the system:

> *[The key user] and users often discussed with IT… They reported to me, describing the reasons [why such action was advised]. I would also give them my comments… I heard from users [about discussion on some requirements]… We could change the system if we wanted, but it could end up costing us dearly at later stages.* (Finance manager)

The key user would reminded users to attend training on behalf of the project team and briefed users and the manager regularly after each meeting with the implementation team. The training and briefings increased the whole division's knowledge of the ERP system.

Building relational ties: after working with three IT members over two projects before the ERP implementation, the finance manager was impressed by the IT members. He was willing to do favors the IT team asked:

> *[Those IT members] were the real executors. They quickly got what we wanted and got along with us… I'd watched out for them for quite a period before this project started… They always made good proposals to solve our problems.* (Finance manager)

Users also felt confident entrusting technical issues to an IT team member because of prior common experiences. The IT member voluntarily attended meetings related to the finance domain:

> *[An IT team member] took care of technical problems… He used to coordinate [a prior project]… [We] felt assured working with him... He voluntarily attended several meetings called by our accounting people to understand our processes.* (Finance key user)

The manager's relationship with the project team deepened as his participation increased. The IT team described the manager as "super studious who showed up every time without exception". Because of his interaction with IT members and feedback from the key user, the manager perceived the IT division as his strategic partner:

> *We used to consider the CIO as a rubber stamp and the IT division as passive system maintainers. Not any more… [The three IT members] were really excellent. They were the key men. They helped us with strategic use of our data.* (Finance manager)

In addition, the IT team took care of users' psychological health and promoted positive relationships through friendly chats and constructive suggestions. Divisional cohesiveness was enhanced, with users being willing to work through difficulties together with the IT team:

> *People who had a hard time often went to [an IT member]. We called him the "shrink". I chatted with him often. He listened to our complaints or just nonsense and helped us come up with solutions… The implementation was stressful. In some divisions, people even threatened to resign.* (Finance key user)

4.3.3. Final Management Support

User participation and management support continued throughout the project. Because of the IT team's advice and support, the users decided to implement a new service (variance analysis) provided by the ERP. The manager agreed to commit extra resources and felt the service could benefit not just the division but also the whole organization:

> *[The finance manager] assigned several people to do this. It would alert us if there were extreme variances. We could also provide analysis reports upon the request of other divisions.* (Finance key user)

4.3.4. Project Performance

Given the manager's and IT team's strong support, the finance division was highly positive about both the system post implementation and the IT project team:

> *We're very confident in the data. They're complete and accurate. So it really depends on how we use the data to do the auditing job… We're so happy with the IT people. The only complaint we could have was that they sometimes could get so busy that we would have to wait [to get our problems solved].* (Finance key user)

5. Discussion and Implications

Our study of the implementation of an ERP system across three divisions in a large semiconductor design house reveals the importance of using social capital to obtain top management support. The product engineering case in particular reveals how management opinion can be turned around through social capital. Initially, the division manager was openly hostile to and resisted the ERP project. However, an IT member was assigned to work with this manager after office hours over a prolonged period of time. Common affiliation to an elite university helped the manager and IT member bond. The IT member also helped address a recurrent production problem. As their interaction increased, a consensus on the project and its execution emerged and their relationship deepened. A traumatic event where the IT member suffered a sudden illness cemented the bond. The close relationship finally shifted the manager's opinion in favor of the project.

The IT team's approach to the procurement division was completely opposite and demonstrates how not using social capital can increase the negative perception top management has of both a project and the IT team. Initially, the procurement manager provided insufficient resources. His passive attitude was due to a previous failed IT project and his general concern about the limits of software packages. He was willing to commit only minimal resources to the project as witnessed by his assigning a single junior employee to the project. This person, lacking experience and currency in her division, was asked to engage her own division (the procurement division) by herself, without the IT team's support. No face-to-face communication with the manager occurred because the manager did not attend meetings. Despite signals of growing disenchantment with the project, the IT team did little to engage with the division. As a result, deliverables by the procurement division to the IT team (e.g., requirements, training manual) and deliverables by IT to the procurement division (e.g., the ERP modules, training program) were poorly understood. Frustration and interpersonal conflicts deepened, and the procurement manager blamed failures on the IT team and refused to increase support.

Finally, the relationship between IT and the finance division confirms the importance of social capital in ensuring continuous top management support. The IT team interacted with the finance division throughout the ERP project's lifecycle. The manager initially had a good impression of the project team because of previous successful IT projects. During the project, in addition to the IT team's direct communication with the manager (e.g., face-to-face, email, phone), an experienced key user acted as a liaison and provided credible information. The IT team responded to requirements raised and provided reasons for unfulfilled requirements. Therefore, the manager understood the system's constraints and followed the project team's technical advice. The team's informal friendly chats with users helped promote positive relationships and reduced negative sentiments about the

implementation. As a result, the finance division continued to champion the ERP project to its completion and treated IT as their "strategic partner".

One can argue that the problems in the procurement division arose principally because of the way the procurement manager handled the project. The manager insisted users not be allocated time to move the project forward and assigned only one junior individual to the project. However, this research's focus is on how IT can overcome a lack of top management support; that is, the situations encountered in both the product engineering and procurement cases. Many other IT departments encounter situations similar to the procurement case—top management is not receptive to the project. The procurement case demonstrates how IT should not handle the situation.

We cannot directly determine how IT should have handled this situation, this being in the realm of conjecture rather than empirical evidence. However, extrapolating from both the product engineering and finance cases, IT should have engaged the procurement users and top manager more. Given the top manager's reluctance to provide more resources, IT should have tasked dedicated staff to enter the procurement department, socialize with users and the manager, and explain the goals and progress of the project.

5.1. Building and Mobilizing Social Capital for Obtaining Top Management Support

Our case study contributes to theory by demonstrating how top management support can be obtained. In most research, top management support is the exogenous construct that predicts outcomes (Liang et al., 2007; Thong et al., 1996). Indeed, research often argues the project team has "limited control" over top management support (Schmidt et al., 2001). Our research demonstrates how top management support can be an endogenous construct managed by an IT project team to encourage IS project success. Top management support is obtainable if the team appropriately builds and mobilizes social capital with top management. Our case study suggests an IT team should socialize or interact with top management to build or mobilize ties for their support in the project. Through repeated interaction, top management comes to appreciate the values of and develops knowledge and personal affinity to the project and project team. In the product engineering and finance cases, the IT team actively sought interaction opportunities with top managers and those they depended on for project information. IT invited management to meetings, asked for feedback, initiated social opportunities such as coffee breaks, alluded to shared school ties, and participated in discretionary social activities (e.g., providing emotional support for users). Contrarily, in the procurement case, the IT team failed to initiate interaction or reciprocate users' interaction attempts. Interactions were sparse and infrequent.

One of the strengths of case study research is it can be applied not only to test the relationship between constructs (Lee, 1989) but also to understand how and why those relationships hold (Eisenhardt, 1989b). A second contribution to theory is that our research explains how social capital influences top management support. Figure 2 presents a process model of this influence. Our case suggests there are two paths to influence top management: a direct (path 1) or indirect path (path 2). Path 1 is the direct social capital approach. In our product engineering study, top management was simultaneously the key user. The case demonstrates how a non-management IT member was able to change a top manager's negative perception of IT to the extent where the top manager was willing to cooperate and actively supported the project to the point of helping to train users. The IT person was able to do this by creating new structural, cognitive, and relational links with the top manager.

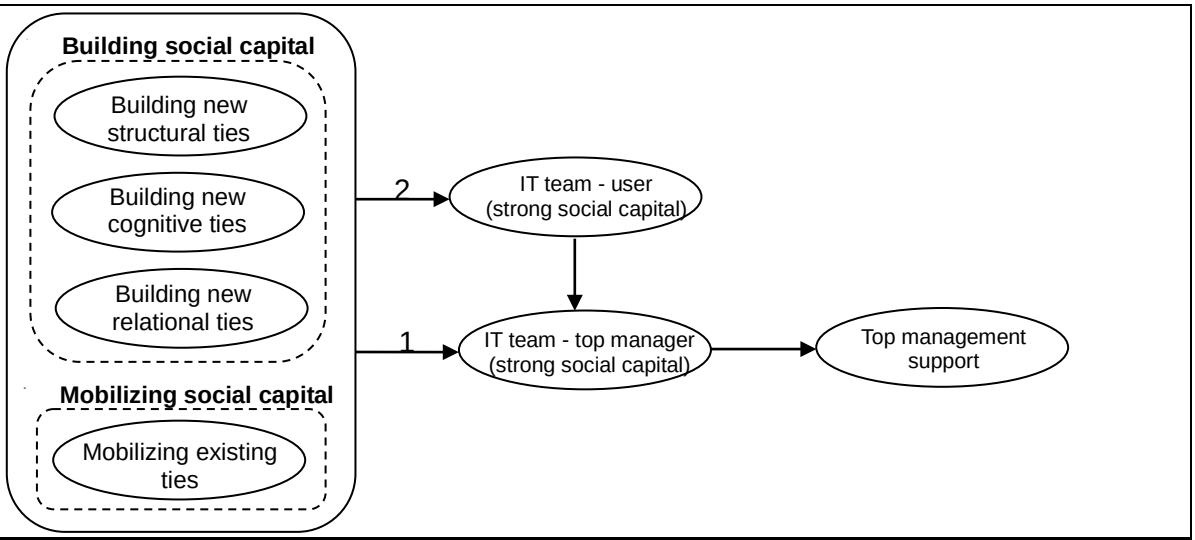

Figure 2. Process Model for Obtaining Top Management Support

An IT team can also directly mobilize existing ties from prior experiences with top management. In the product engineering case, the IT person used his shared school tie to induce top management's liking because top management took the school tie as a proxy for his credibility. Since those ties were already built in a remote context (school) and mobilized in the current project setting, we collapse them into one sub-process as "mobilizing existing ties" in Figure 2.

In addition, information systems researchers studying distributed software projects argue for the key role that "straddlers" (Nicholson & Sahay, 2004), "bridgeheads" (Carmel & Agarwal, 2002), and "boundary spanners" (Chua & Yeow, 2010; Pawlowski & Robey, 2004; Tushman, 1977) can play in bridging disconnected groups or individuals. Path 2 demonstrates the indirect social capital approach. In our finance case, IT engaged users in the finance department and, thereby, built new social capital links with the finance department and indirectly with top management. The IT team in this case principally interacted with the key user rather than the top manager. They actively negotiated new requirements with the key user and offered technical solutions to overcome difficulties. Furthermore, an IT team member spent hours talking with users about their emotions or offering technical advice. The impressed key user and users then fed positive reports to the top manager, which improved his perception of IT and his willingness to cooperate and, hence, his support for the project.

Likewise, an IT team can indirectly mobilize existing social capital with users to influence top management. As an example, consider an IT team member's prior interaction with people in the finance division on several successful IT projects. The prior interaction assured the users of IT's credibility and assured them that IT's judgment would be good.

While IT principally built (and mobilized) direct social capital in the product engineering case and indirect social capital in the finance case, these two cases demonstrate both direct and indirect social capital. In the product engineering case, an IT person not only influenced the manager directly but also influenced the manager's subordinates. He went out with users during coffee breaks and also intentionally made explicit their school ties and engaged users in continuous socialization. Similarly, in the finance case, IT personnel interacted directly with the manager. They discussed and explained issues to this manager during the (many) meetings he attended and mobilized communication channels and positive feelings associated with prior successful IT projects to engage top management.

In the end, both the product engineering and finance managers developed a relationship of reciprocal dependence with IT: the managers provided support to IT partly out of perceived project benefits and partly to reciprocate IT's willingness to adapt the project to accommodate their idiosyncratic needs. Therefore, as the project was coming to a close, the product engineering manager allocated not only

his time after-office hours but also the time of his subordinates. The finance manager was willing to do favors the IT team asked and collected information about what IT needed (e.g., from meetings, direct communication with IT and subordinates' reports) to support the IT team. Indeed, top managers have both instrumental (i.e., perceived benefits) and social (i.e., obligation to reciprocate) motives to support an IT project, with both motives bolstering the interdependent relationship.

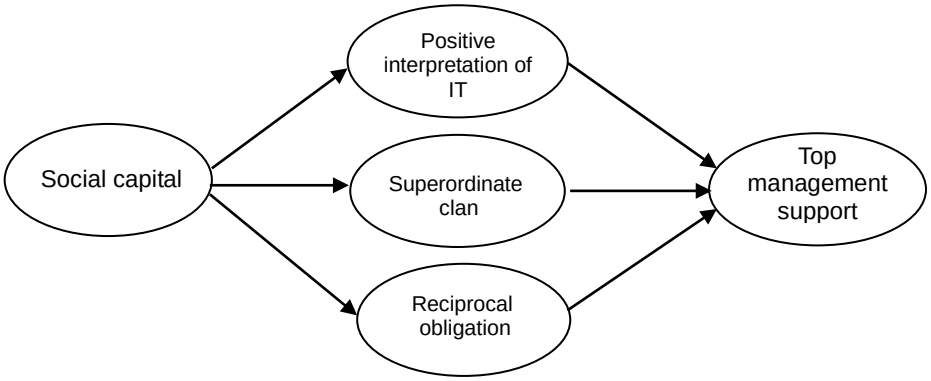

Figure 3. Variance Model for Obtaining Top Management Support

Our third contribution is in explaining why social capital influences top management support. Figure 3 presents a variance model derived from our data. Our research suggests at least three factors mediate the relationship between social capital and top management support. First, our research demonstrates that social capital influences how top management interprets IT's actions and a project's events. Social capital creates a positive impression of IT from prior interaction. This encourages top management to interpret IT's current and future actions in a positive way (De Carolis & Saparito, 2006; Nisbett & Wilson, 1977; Salancik & Pfeffer, 1978). For example, both the procurement and finance departments were informed that the ERP package could not do everything the department wanted. In the finance case, the information prompted top management and users to work with IT to develop ways to work around the limitations. In contrast, in procurement, the information made the manager resist the project because he believed it confirmed IT's incompetence and lack of intent to address problems. Given essentially identical information, distinct degrees of social capital created two separate behavioral outcomes on the part of top management.

Second, in line with the literature, social capital causes the formation of "clan" behavior (Chua et al., 2012; Kirsch et al., 2010). As a result, top managers viewed themselves as associated with IT. The clan concept is not an all-or-none phenomenon (Ashforth & Mael, 1989). Both the finance and product engineering head continued to view themselves as belonging to the finance and product engineering "clans". However, they also viewed themselves as belonging to a superordinate "clan", the "project team", which included their own departments and IT. The shared identity means top management views their fate as being intertwined with IT, which induces top management to cooperate. For example, the finance manager stated that he viewed IT as a "strategic partner". The product engineering manager helped his "comrade" train key users from other departments and persuaded other top managers. In contrast, the procurement manager felt no clan affiliation and installed policies to protect departmental interests from being compromised by restricting users' participation in the project.

Finally, the trust engendered by social capital allows for interaction without the need to negotiate terms or to know when and whether the other party will reciprocate (Molm, Takahashi, & Peterson, 2000). The stronger social ties are, the more likely it is that actions will be reciprocated (Granovetter, 1973; Heider, 1958). Both the finance and product engineering managers felt obligated to reciprocate IT's continuous interaction to sustain such ties with IT. For example, IT's assistance with the ERP and

associated systems (e.g., the workflow system requested by engineering) helped foster trust in the product engineering manager. As a result, the manager assigned all engineers to help IT. The finance manager attended many meetings and did favors in return for a history of help given by IT on prior projects. In contrast, the procurement manager decided to withhold his support because IT failed to demonstrate trustworthiness (e.g., via responding or showing sympathy to issues raised) and, thus, failed to accumulate reciprocal obligation in the procurement top manager.

In summary, Figures 2 and 3 view the same reality in different ways and reveal different but related information about top management support (Mohr, 1982; Sabherwal & Robey, 1995). Figure 2 (process model) uses information on actions and their temporal order to explain how top management support is obtained, and Figure 3 (variance model) explains why top management support is provided at different levels. That is, the strength of social capital influences the level of the three factors (positive interpretation of IT, superordinate clan, and reciprocal obligation), which, in turn, influence the level of top management support.

5.2. Contributions to the ERP Literature

Our research enriches and refines the ERP literature in three ways. First, our study identifies ways an IT project team can influence the most critical success factor of ERP implementation (i.e., top management support). Prior literature has argued that top management support is outside the control of an IT team (Schmidt et al., 2001), which might be due to the temporary nature of an ERP project in which a project team is argued to work outside the formal structures with strict time and resource constraints. Thus, the project team is viewed as being unable to influence top management. Our study recognizes an IT team's social capabilities to build and maintain relations are as important as its technical capabilities (i.e., problem solving) for obtaining top management support. We further highlight the importance of the continuity of relationships with top management and their confidants before the project starts and even after the project closes (e.g., post implementation evaluation). Thus, our study calls into question the notion of an ERP project as a time-limited unique assignment. Instead, it echoes recent calls for IT project management research to extend the scope to obtain historical and organizational context information (Elbanna, 2012; Engwall, 2003).

Our research demonstrates how actions by an IT team before an ERP project commences can impact the ERP project itself. Such prior actions can have positive effects. The finance case demonstrates prior successful projects established communication channels for transferring credibility information and positive feelings to the ERP project. Prior actions can also have negative effects. The procurement case demonstrates how prior failed projects can instill mistrust and prejudice against the ERP project. Thus, an ERP project's success hinges on actions taken by IT not only during the project but also in the months or even years before the project commences.

Our second contribution lies in clarifying the relationship between trust and control in influencing the behavior of top management. Prior literature has debated whether trust and control are complements or substitutes. The substitute view emphasizes how control breeds more control and how control signals a lack of mutual trust (Ghoshal & Moran, 1996). The complement view suggests trust and control are two alternatives that jointly and independently contribute to something in common (e.g., cooperation) (Das & Teng, 1998; Madhok, 1995). Both views imply trust and control operate with different logics: trust operates with a concern for joint gain and control with a concern for opportunistic behaviors. In our research, trust is one type of relational social capital (others include liking and a sense of obligation); trust can be instrumental (e.g., confidence in IT's competency and intention in delivering users' requirements) and built by creating a context in which information about IT's credibility is provided to allow top management to determine when trust in IT is warranted (Lander, Purvis, McCray, & Leigh, 2004). Such trust-building mechanisms may include formal meetings, physical co-location, deployment of key users, informal coffee breaks, and so on.

Our research suggests trust does not necessarily contradict the use of control. We partly clarify that trust helps (informally) control top management support for an IT project. In an ERP implementation, the most value can be realized only when the project is accompanied by associated organizational

change (Markus, 2004). If top management withholds support for organizational change, an ERP project's benefits will never be realized. With trust and other relational social capital as a reference point for interaction, top managers are more likely to support an ERP project because they believe IT will behave reliably and extraordinary benefits will be co-created. The finance case demonstrates the finance manager provided support to make his relationship with IT increasingly worthwhile. Contrarily, the procurement case demonstrates that, because of the manager's belief that IT put their own interests first, it was impossible for the manager to support the project.

Our third contribution is to suggest that ERP misalignment may arise in part because of a failure by IT to build and mobilize social capital. ERP misalignment has been traditionally defined as the gap between organizational requirements and system functionalities (Sia & Soh, 2007; Soh, Kien, & Tay-Yap, 2000). Our research reveals that misalignment can result from a failure to develop a shared understanding of an ERP project (i.e., cognitive social capital). The procurement case demonstrates how misalignment arose from IT and users possessing different interpretations of procurement practices and reluctance to work towards common ground. In contrast, the product engineering case shows IT and top management willingly co-creating new deliverables to reconcile competing interests. Neither the product engineering manager nor the IT team member initially conceived of the PIM module. Instead, it arose as a result of their joint discussion. While our research did not test this conclusively, our findings suggest that strong social capital between IT and a functional area can reduce ERP misalignment.

5.3. Practical Implications

Our research contributes to practice in three ways. First, it highlights the importance of non-management IT members in obtaining top management support. As in the engineering case, IT employees can work with both top management and people with influence on top management to build relationships with top management. Furthermore, IT employees' visible performance (e.g., proposals, responsiveness) shapes top management's perception of the IT division's ability and intention to implement a project and hence overall top management support. This suggests positive relationships with a representative of a collective (i.e., an IT employee) can be transferred to the collective (i.e., the IT division) (Doney & Cannon, 1997).

Second, it demonstrates that top management support is cultivated not only at the beginning of a project but even at times before. The lukewarm versus enthusiastic response of the procurement/finance manager stemmed partly from previous failed/successful projects done for those respective divisions. Substantial research has demonstrated that social capital takes time to develop (Wilkins & Ouchi, 1983). Thus, our research demonstrates the importance of having the IT department cultivate positive relationships with other organizational departments. Getting top managers of other functional areas to like IT staff might go a long way to obtaining their support on a project. One should consider recruiting IT staff that can not only perform technically but also establish and maintain relationships with other functional areas. An IT member should be capable of working with people from different functional backgrounds in a sociable manner. Thus, our study echoes Bourdieu's emphasis on "an unceasing effort of sociability" (1986, p. 87) for (re)producing social capital.

Finally, given that it is IT's continuous and mundane engagement with top management that allows IT to build social capital and, thus, top management support, our research has implications for helpdesk and outsourcing strategy. Like other users, top management's most frequent engagement with an IT department will be with its support section; after all, top management spends more time using IT than developing it. This includes engagement with a project team after project go-live and more mundane support such as infrastructure support. In many organizations, helpdesk and support are often considered secondary functions. However, helpdesk is also the most visible form of continuous IT work. In a nutshell, the IT helpdesk worker is in the best position to build rapport with top management, either directly by helping top management with a problem or indirectly by helping those who can influence top management. IT departments that consider helpdesk a secondary concern or outsource helpdesk run the risk of losing management support and, thereby, making project implementations less likely to succeed.

6. Conclusion

In this paper, we demonstrate that top management support is something within the influence of an IT project team. Specifically, these teams can obtain such support by using direct and indirect social capital. Repeated interaction allows an IT project team to strengthen structural, cognitive, and relational ties with management and, therefore, to increase support from them. We demonstrate the importance of social capital for cultivating top management support through a cross-case study of three divisions in a large semiconductor design house. Direct social capital is built when an IT team builds new ties with the top manager or is mobilized from a history of interaction with top managers; indirect social capital is built when an IT team builds new ties with someone who has social capital with the top manager or mobilized from a history of interaction with the person. We suggest social capital's influence on top management support is mediated by at least three factors: positive interpretation of IT, superordinate clans, and reciprocal obligation.

As with all case study research, ours has several limitations. First, we collected data retrospectively. By the time we entered the field site, the project had completed. This limitation was partly offset by our using multiple data sources, including archival materials. Also, we interviewed and cross-checked across a spectrum of project stakeholders and, thus, minimized the possibility that a particular stakeholder misremembered events (Dubé & Paré, 2003). Second, our findings arise from a complex and cross-functional IT project of a single Asian project site in a particular industry. It is possible that findings do not apply to simple IT projects with other organizational or national cultures in different industries. Nevertheless, given how our research resonates with the social capital literature, our findings still generalize to theory (Lee & Baskerville, 2003). Further research is required to see if our findings are generalizable to different project characteristics of distinct organizations in different cultures. Finally, our research says nothing about the relationship between top management support and project success given the modules analyzed in the study went live and the project was considered successful. However, our research focus was on top management support as a dependent variable; our research question focused on how to obtain such support. Substantial other research has already established the link between top management support and project success.

Our findings open up numerous opportunities for further research. As we mention in our limitations, there are inherent constraints associated with case study methodology. Research using other methods such as surveys across a wider variety of organizations is important to triangulate our findings. Also, we do not claim the exclusivity of the process and explanatory factors documented in our study. For example, many strategies have been reported as efficacious for influencing people, such as offering exchanges, forming coalitions, or ingratiation (Yukl, Guinan, & Sottolano, 1995). More research should be done to identify other processes (and factors) or combination of processes (and factors) that influence top management to support projects. Finally, our research raises the question of whether outsourcing reduces the influence of the IT department on strategic IT project decision making. Our research suggests the importance of low-level IT employees in influencing top management. If these individuals are outsourced, IT department influence is lowered, and, thus, IT can lose control of its ability to influence strategic IT policies.

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