

2005

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Recommended Citation

Wenger, Mitchell R.; Dhillon, Gupreet; and Caldeira, Mario, "ERP Implementation in Portugal: Interpreting Dimensions of Power" (2005). *AMCIS 2005 Proceedings*. 348.

<http://aisel.aisnet.org/amcis2005/348>

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ERP Implementation in Portugal: Interpreting Dimensions of Power

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ABSTRACT

We use the dimensions of power framework (Hardy and Leiba-O'Sullivan 1998) to study an ERP implementation in a Portuguese small/medium sized enterprise (SME). In this study, we found that while the ERP implementation coincided with a great shift of power within the firm, it should not be considered the main driver of the episodic power shift. Instead, the ERP can be seen as a tool chosen and used to formalize and complete the shift in power for this SME. Our findings provide evidence of the usefulness of the dimensions of power framework in understanding complex organizational power issues in ERP implementations. Given the nature of the firm and the context, such findings are specific to an emerging economy.

Keywords

Dimensions of power, emerging economies, SMEs, Portugal, ERP implementation.

INTRODUCTION

The role of information systems (IS) in organizational power distribution has been of interest since the inception of IS research. Significant questions remain as to how IS influences power within an organization or whether existing power structures are simply reflected during IS implementation. Studies in large enterprises and governmental institutions have been well represented. Recently, however, a number of factors have given rise to the increased use of enterprise-level IS in smaller firms (Adam and O'Doherty 2000). Technology is more affordable, skilled IS personnel are available throughout the world, and enterprise software vendors have focused marketing efforts on smaller customers. This combination has resulted in an increase in the number of enterprise IS implementations in small and medium sized enterprises (SMEs).

The purpose of this paper is to gain insight into the reasons for the success or failure of enterprise systems in an SME as they relate to organizational power. Our case study is a medium-sized Portuguese enterprise. REM is a real estate management firm facing succession issues in light of the CEO's upcoming retirement. Several key executives in the firm vie for the position, and the implementation of a new enterprise resource planning (ERP) system comes to symbolize their struggle for power. We apply the dimensions of power framework to the implementation of IS in SMEs in order to better understand the role of IS in episodic redistributions of power.

Recent attention has been directed toward research on SMEs, citing size as an advantage by providing a less complex environment for study (Mitchell 1998). For a case study, the smaller number of actors in an SME allows for a more complete view of the impact of managerial and IS power, although it may come at the expense of relationship complexity within the organization. However, the intimate environment also makes the researcher more conspicuous in her work, potentially affecting her findings. This study uses an interpretive approach. We adopt a theoretical framework to interpret a range of ERP related implementation issues. Methodologically, such approaches have been used extensively (Barrett and Walsham 1999; Dhillon 2004).

This paper is organized as follows: in the next section, we discuss the informing works guiding our study. Following that, we formulate our research problem and describe our approach and framework. Next, we present an overview of the case study. After that, we present our findings using the evaluation framework. Finally, we discuss our contributions and outline areas for future research.

INFORMING WORK

Our study addresses the intersection of three primary research streams. First, work in organizational power provides our foundation for investigating the fundamentals of power. Next, research on IS and power give focus to issues relating to the implementation and use of IS. Finally, research on small and medium enterprises provides guidance in our approach to the selected case study. Each of these areas is explored further in the following paragraphs.

Organizational and political power has been analyzed for centuries. Hobbes' 16th Century view of civilization itself can be seen as the exercise of power by the sovereign over those being governed (Hobbes 1998). Clegg notes that studies of power have historically focused on overt shifts in power (Clegg 1989). His view of power calls these shifts episodic power. This type of power is the most accessible and visible of his three circuits of power. Episodic power is typically exercised only infrequently, leaving long periods of time where other types of power dominate. Clegg's other circuits include dispositional power, the normal rules of practice within an organization, and facilitative power, which is integrative in nature.

Organizationally, Hardy and Leiba-O'Sullivan (1998) look at empowerment efforts in the 1990s, finding dissatisfaction by both managers and employees. Their analysis of empowerment leads them to a framework based in part on Lukes' three-dimensional analysis of power (Lukes 1974). To this, they add an additional dimension inspired by the work of Foucault: the notion of systemic power as embodied in the knowledge and relationships exercised by (and over) the various actors in their social or organizational network (Willcocks 2004). Their resulting power model includes four dimensions. The first dimension is political power over the range of resources available in the organization, otherwise known as "power over." The second dimension challenges the notion that the decision process is open to participation by all interested parties, and may even be carefully designed to prevent the powerless from gaining power by participating. The third dimension evaluates power as it is used to prevent the emergence of conflict in the first place, through the normative attribution of organizational meaning, beliefs and practices. The fourth dimension incorporates Foucault's view of power as woven into the relations and discourses throughout the organization. This deepest dimension of power is disciplinary in nature, and helps to shape members' beliefs about their roles. This "power of the system" constitutes the core values of an organization, and is very difficult to change.

Initial research on power in the IS literature viewed power as information-based (Markus 1983). In this scenario those implementing the IS hold the keys to distribution of power relationships. Dhillon (2004) argues that organizational power is more complex, requiring a multi-faceted analysis approach. He developed an evaluation framework for Hardy's dimensional power model, with analysis of each dimension along four change criteria: changes in people, changes in systems, changes in structure, and changes in culture.

Enterprise IS implementations represent a significant investment in finances, time, and resources, even for the largest companies. Although the cost for SMEs may be smaller, the level of investment as a percentage of the enterprise may be even greater. Despite this, the number of SMEs implementing packaged ERP systems has increased recently (Markus et al. 2000b). Regardless of firm size, no significant milestones have been identified as guarantors of success in an ERP implementation (Markus et al. 2000a). Instead, tight project management and a focus on successes and improvements are required during the entire process.

Portugal is unique regarding business practices and IS use (Caldeira 1998). Though situated in Western Europe, it is considered an emerging economy, with estimates that it may take up to seventy years for its GDP (gross domestic product) to converge with the rest of Western Europe (Lane 2000). Traditional Portuguese business practices have led many SMEs to remain closely held, family-run firms. Portugal has been slower to adopt enterprise IS than other European countries. This could be due in part to the impact of national culture on the level of IS adoption (van Everdingen and Waarts 2003). It has been demonstrated that ERP implementations must account for both organizational and national cultures to ensure success (Krumbholz and Maiden 2001). The ability of an ERP to adapt to requirements of an SME is another consideration. In this study, power relationships, properties of SMEs, culture and environment all interact to influence the success of the IS.

RESEARCH APPROACH

This paper addresses the nature of power in IS. We investigate the problem by focusing on an implementation in a Portuguese SME, allowing us to bring to bear case study findings from an emerging economy. We also address whether the ERP is a key driver of power movements within the organization. Is the ERP itself a cause for episodic power shifts, or is the ERP merely a tool used to validate and institutionalize pre-existing power shifts?

To help guide our analysis, we explore our findings using Hardy's dimensions of power framework. As described above, the first three dimensions describe the management of resource dependencies, of decision-making processes, and of meaning. The fourth dimension, which is not managed, is the power embedded in the system. Dhillon (2004) presents an approach to

evaluating different types of changes in an organization with respect to their effect on Hardy's dimensions. We use this approach in our current study to analyze the impact that various events surrounding the implementation of an ERP have on the overall organization. In an SME, a change of CEO can be the catalyst for a wide range of changes, including the very traditions and beliefs on which a firm is based. We argue that power in all four dimensions must be mobilized in order to realize a complete change in the organization.

These are important research questions for several reasons. Although large enterprises and governments are the most visible components of an economy, SMEs usually drive the bulk of economic activity, especially in terms of employment. This may be even more so in emerging economies, of which Portugal is a relatively advanced example. Since many emerging economies' growth rates are higher than those of their more established neighbors, it becomes apparent that understanding the nature of IS power in SMEs is critical in achieving implementation success. In addition, many SMEs are not publicly traded on securities exchanges, but are closely held, either in a partnership structure or by a small number of shareholders. This is an additional factor that may affect the nature of organizational power for these firms.

Our research methodology uses an interpretive case study approach with a variety of data collection mechanisms. We had access to the case study organization throughout the implementation and beyond. Extensive interviews were carried out with key stakeholders. We used the dimensions of power framework as a structuring device to manage the nature and scope of data collection. All interview notes, write-ups, e-mail exchanges, and observations uncovered during subsequent discussions were analyzed to identify emerging themes related to REM and the ERP project. These themes were applied to our evaluation framework to determine how each dimension of power manifested itself at REM, and what changes took place during the course of the ERP project.

CASE OVERVIEW - REM

REM is a medium-sized (US\$100M) Portuguese firm in the asset management business. REM manages a range of commercial properties. REM is a closely held company, with a three person board of directors at the start of our analysis. The initial CEO was a professional manager who actively managed REM.

It was well known throughout REM that the CEO planned to retire in 2003, leading to a question of his succession. REM had hired a new Sales and Marketing manager (SMM), with significant industry experience in South America, in the late 1990s. REM wanted to grow, and industry reports indicated that opportunities were abundant. To help spur desired growth, the CEO hired a new Executive Director, who was elected to the board. The new Executive Director (ED) had many years of experience in the industry. The 2002 board also included a relative of the primary stakeholder, who was not actively involved in the daily activities of REM.

REM's Finance Manager (FM), a long term employee, oversaw accounting, finance, IT and human resources. The final top manager at REM was the Maintenance Manager (MM), another long time REM employee. One of his responsibilities was maintaining REM's physical plant, raw materials, and equipment. Figure 1 portrays the primary players at REM at the start of our study. REM did not have much IS expertise in-house. The IT Manager (ITM) managed the firm's integrated system, a COBOL-based system developed by a local software house and purchased years ago. REM's installation had modules specifically designed for the real estate business. Most other work was outsourced to small, local firms. The ITM reported to the FM.

REM needed a new ERP for two primary reasons. First, REM wanted to restructure itself into smaller entities for tax and legal reasons. The legacy system could not handle the consolidation required by this restructuring. Second, the new ED was not satisfied with the information obtained from the legacy system and deemed it inadequate for REM's growth plans. With limited IS expertise, REM created a search committee to evaluate alternatives. The SMM brought in his previous employer as a potential vendor and encouraged REM to hire them. Other executives were not convinced that this was the best solution.

The selection process had several stages. First, the ED, the FM and the SMM looked informally for better software, especially ERP systems. It was important that all the six firm agencies be online, which was not currently the case. REM ran into difficulties in selecting a new system. The ITM was too close to the existing system to lead a process of change. The SMM put pressure on the selection committee to hire his previous employer. REM decided it needed additional help.

Next, REM hired an independent IS consultant (ISC) to evaluate their existing system and make recommendations for improvement. The final report confirmed that the legacy systems did not provide adequate flexibility to handle REM management's new requirements, and suggested implementing an ERP system for medium-sized enterprises. The board followed these recommendations and appointed a selection committee consisting of the ED, the FM, and the ISC. The board selected the ERP system and implementation vendor based on a selection committee report. The ISC was also retained to manage the ERP implementation project.

Eight of ten invited firms presented their ERP proposals to the selection committee. Three well known products were presented, with one recommended both because it was less expensive and because it was better suited to accept REM-specific modifications required for all of the packages. The ISC, who participated in the selection phase, had more expertise on the recommended software than on the other packages. The selected vendor was then engaged to implement the ERP, a well known mid-market solution. Several managers had legitimate expectations of succeeding the retiring CEO or becoming a board member. The events surrounding the implementation of the system influenced how power was distributed in the organization and provide insights on organizational power and resistance to change in IS projects.

The SMM saw his omission from the selection committee as a major career setback. He was an experienced manager and knew that the existing system was inadequate, but wanted the new ERP to be implemented by his previous firm. He trusted the people and viewed IS control as a means of increasing power at REM, thus enhancing his standing at REM. Although he reported to the ED, he was also competing with him, as well as the FM, for advancement. Since he was not directly involved in the ERP project, the success of the new IS would not bring him any personal benefits.

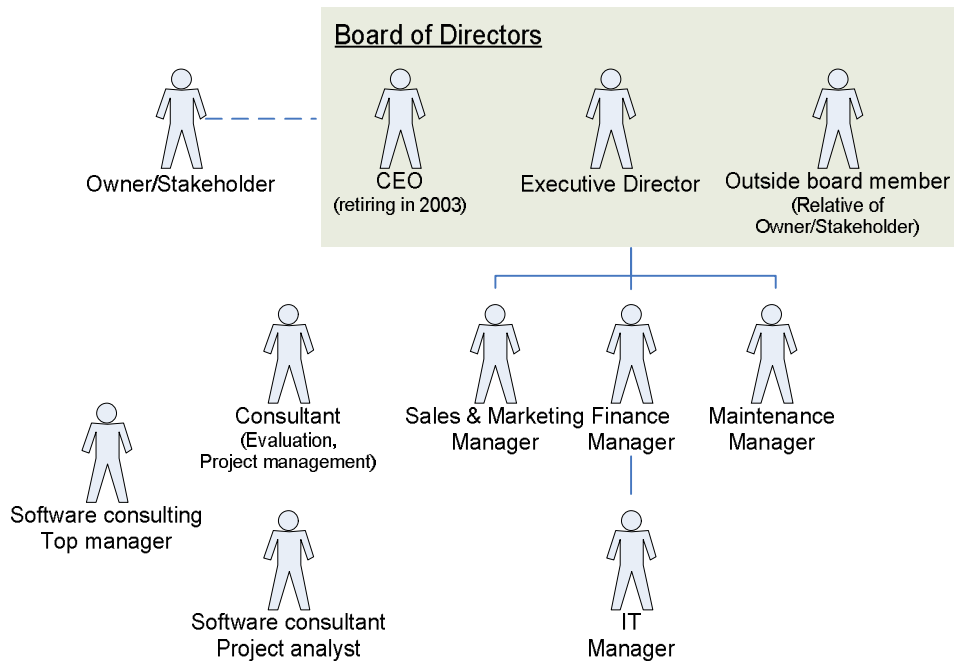


Figure 1. Primary Implementation Players

The ITM of REM reported to the FM. Previously, he had developed a good relationship with the legacy system vendors. He was the only person that knew it well. Since most users and managers were not satisfied with the software, they did not use it very often or very well. Top management was not satisfied his performance, and was amenable to hiring another person to improve IT in the firm. The ITM knew that as long as he maintained exclusive knowledge of the system he could keep his job without great effort. For him, replacing the system put his job at risk.

The MM had been with REM for a long time, but maintenance was a problem. Raw-materials were disappearing, and little management information was available about maintenance tasks. Most technical people had little formal education and did not use IT properly. The MM was initially suspicious about the new ERP system.

The Board of Directors hired the ERP and software consultants. The ISC was retained as project manager, partly because he had significant experience with the package. The software vendor was not directly involved in the project, as the license was bought through the implementation consultants.

There was concern at REM about the small size of the consulting firm, but their expertise and professionalism was convincing. The selection committee believes they made a good choice. For the implementation, a steering committee was formed including the three members of the selection committee plus two members of the software consulting firm: a top

manager and the project analyst. The total cost of the project was around US\$1 million, including implementation of the ERP modules plus customizations, hardware, a virtual private network, and training and development. The steering committee handled most project decisions, only deferring to the board a few times.

Although the CEO had been active in REM's management, the ED had specific ideas for improving performance. The succession plan was still unclear, resulting in the emergence of a relative power vacuum. Partly due to the results of the ERP selection process, the SMM lost significant power at REM. During the course of the implementation, the ITM, who demonstrated resistance to the new system, was demoted to a lower position, and a new ITM was hired.

Four consultants participated on the project: the systems analyst, (also served on the steering committee); the ISC (steering committee), and two networking specialists. The software vendor was not directly involved in the project. The key actors in the project demonstrated different levels of participation and support. The ED was strongly supportive of the system and became the project champion. As a result, he staked a great deal of his credibility on the success of the project. Failure would negatively affect his reputation at REM. His participation level was very high, and he worked hard to make the system a success; motivating people, managing the project plan, and being available to explain business requirements. During the project, the retiring CEO scaled back his participation in daily management, eventually retiring in 2003. After he left, the leadership of the ED was reinforced in the organization.

The SMM, a champion for one of the rejected vendors (his previous employer), initially became very demanding, asking for quick solutions to complex requirements in the new system. He wanted to be more involved in the project, and took an aggressive approach. The ED had to step in to help resolve the situation. The SMM had worked previously in South America, where the power distance cultural factor is higher than in Portugal (Hofstede 1983; Hofstede et al. 1990). Consequently, his demanding approach was not well received by his peers, even though they recognized his professionalism. He lost some power at REM, due in part to the success of the ERP project. As he saw the increasing success of the project, he began to collaborate more in project activities.

The FM was also supportive of the ERP effort. He participated significantly on the project, working closely with both consulting teams and the Steering Committee. The success of the project influenced his election to the Board of Directors – a significant increase in organizational power.

The ITM initially showed resistance to the new system. He knew the legacy system well, and while the old system was alive, he knew the firm depended on him. When the new system was adopted, a new ITM was hired, relegating the previous ITM to a less powerful position.

The new CEO was a surprise selection: the existing Board member related to the majority owner. He has acted primarily as a hands-off CEO. As a result, the ED, based to a large degree on his success with the ERP implementation, now effectively manages REM on a daily basis. The cost benefits enabled by the new legal entity structure, coupled with the gains in financial reporting efficiencies, have solidified the ED's power within REM as it embarks on its growth plan. The benefits of the new system have been estimated at about US\$3 million in cost efficiencies for just the first two years.

DISCUSSION

Our findings indicate that IS can be used as a conduit to institutionalize existing power structures, but is not a key driver for redistribution of power dimensions. This is in contrast to large organizations, especially in the financial services industry, which have seen significant redistributions of power as a result of IS implementations.

IS implementations *can* be used, however, as a consolidator of power redistributions in SMEs, as demonstrated at REM. The ED had already achieved a role of power within the organization, but, being a relative newcomer to REM, his hold on that power hinged on the successful implementation of the ERP. His success despite the resistance of at least two key players solidified his standing at REM. Table 1 outlines our findings as applied to our evaluation matrix.

Mobilization of resources resulted in significant changes in people (cell 3). As indicated in our interviews, the "ITM was too involved with the legacy system," and the "ITM did not want to change." This was true for several reasons – the legacy system depended on him. He was the only one who knew the legacy system well enough to work with it properly. Hanging on to the legacy system ensured his job. As noted by one consultant, "the legacy system was the anchor of his power in the organization." Since he was so involved with the system, he showed significant resistance to change and was becoming less important for the organization. He could have agreed to be "less important" and stayed on in the position, but his resistance to change and frustration at his decreasing importance was more than he was willing to accept.

	Mobilizing power of Resources	Mobilizing power of Processes	Mobilizing power of Meaning (through conflict reduction in attribution, beliefs, and practices)	Mobilizing power of System (core values)
Changes in Structure	(1) Divided parent company into several legally independent units for tax purposes	(5) Improved information handling. Emergence of a well defined IT department. Increased reliance on IT department.	(9) Different stakeholders had divergent views of the system.	(13) Move from legacy system to a new ERP changes the old bureaucratic structure to a lean, process oriented one. REM is now more results-oriented than in the past.
Changes in IT Systems	(2) Investment made to integrate disparate legacy systems to ensure accountability and proper governance.	(6) Computer based tool set is used to redesign business processes.	(10) Understanding IS development process; Understanding potential benefits; the impact of IS on you and your job and the basis on which systems get adopted influence an individual's perspective in dealing with change.	(14) The new system has a positive impact on the general management of the organization. Managers understand their roles and responsibilities more clearly now.
Changes in People	(3) Changes in major roles and responsibilities to streamline the organization.	(7) Business Process Management tool provides performance evaluation mechanism – increasing transparency in the evaluation process.	(11) ITM had a hidden agenda – keeping the legacy system and his job. The system had a big impact on his job and work.	(15) Confusion between how people at different levels react to changes. Uncertainty is resolved as the succession takes place and the new system becomes established.
Changes in Culture	(4) New ED hired. Made efforts to change family-oriented non-professional culture to a more articulated and structured organization.	(8) New processes significantly changed casualness in the culture to most aspects being measured, assessed and monitored.	(12) The prevalent culture varied among different stakeholder groups: from being straightforward and achievers (top mgt), to indifference (middle mgt) and politicizing the process (IT mgt).	(16) As a consequence of the new system, structures and processes, a different culture is emerging. Many organizational members are not entirely comfortable engaging in interactions in this newly evolved culture.

Table 1. Analyzing Power Issues for Strategic Change at REM

Mobilization of resources led to changes in culture at REM (4). There were limited opportunities to increase income given the recessionary times. In such times, firms tend to bolster profitability through cost saving and budget tightening methods. In maintenance, raw materials were disappearing (shrinkage). The new system brought to the firm a “culture of rigor”... better management... better resource management. The company was aware of the materials problem, but could not do much. Being a private firm, it had to some extent a culture of solipsism (relatively internally focused). When the ED was hired, he saw much potential for improvement. This firm had grown from a family business; the ED brought with him a great deal of professional experience, and he set out to design new processes – ensuring rigor, renegotiating contracts, and changing organizational structures, among other changes. Many of these changes went beyond the initial objective of tax benefits, addressing overall efficiency at the firm. He also initiated the creation of profit centers within the firm.

Mobilization of new business processes resulted in enormous changes to REM’s structure (5). The improvements in information quality under the new system led to improvements in information handling. Interestingly, this resulted in improvements in the IT department, the enabler of information handling for the rest of the firm. As reporting structures became clearer, and allocation and distribution of the workload became more balanced, all departments in REM became well defined in terms of functionality. As a result of these changes, dependence on the IT department actually increased, or rather, the IT department became well defined itself as a result of REM’s changes.

Mobilizing processes also led to changes in systems (6). As part of its ERP implementation, REM implemented a computer based tool set to design business processes. The tool allows mapping of processes, then provides a mechanism for evaluating the performance of people utilizing them. Each person can view processes to identify where they are involved, “like having an online procedures manual linked to the ERP.” One can analyze working peaks and bottlenecks in order to facilitate scheduling. This functionality has not yet been activated, but there is a feeling that once it is, it will be like “the big brother watching everybody.”

Process mobilization also had an impact on the people at REM (7). The ERP included a Human Resources module, which was an improvement from the previous payroll-only system. It is now possible to evaluate employees’ performance against a standard set of attributes. REM’s intent under the new system is to classify people according to their performance results and other categorizations in order to differentiate salaries, bonuses, benefits and promotions.

Mobilization of meaning also resulted in changes to structure (9). The key stakeholders in this study were top management, IT personnel, and user managers. How was IT impacting these three groups? For the previous ITM, the ideal scenario was that the “new system was not supposed to work.” He had a good relation with the vendor for the legacy system. Any changes came from the vendor. The previous ITM was therefore not comfortable with the proposed change. Meanwhile, top management saw the system as a blessing... something they could use to improve their work practices... a boon. Most user managers had doubts about the impact the system would have. In any case, most people at REM were not that conversant with IT. Their perspectives changed from day to day, based on their immediate experiences with the IS. Top managers understood the challenges and tribulations of software development. They understood that things wouldn’t necessarily be smooth. They understood that it is a challenge putting systems into practice. The users, however, do not typically understand these tribulations. For them, an “IT system was like buying a car. You buy it, turn the key, and it should work.” As the consultant points out, “Knowledge of (the) IS/IT development process; knowledge of IS/IT’s potential benefits, the impact of IS/IT on you and ... your job are the basis on which systems get adopted.”

Mobilization of meaning also had an impact on culture at REM (12). The ED understood the development process and project management in general. He knew what to expect, even he was not a technical expert. Both the FM and SMM had a clear understanding of the process. The initial CEO was not that clear about the process, but understood the sentiment. Middle management did not seem to have a clear understanding of the IT implementation process at all.

CONCLUSION

This research makes several contributions to the IS literature. From a research perspective, it extends the analysis of Hardy’s dimensions of power model to smaller organizations. It also validates Dhillon’s evaluation framework for dimensions of power by providing a cogent explanation across all four power dimensions for the changes and outcomes resulting from REM’s ERP project. As we found through our analysis of this case study, IS is not the primary motivator when it comes to changing a company’s core values, i.e. the “power of the system.” However, enterprise IS *does* provide a mechanism for formalizing and consolidating power for those organizational actors who can effectively utilize it.

For practitioners, this paper highlights the power dimensions to be considered during IS implementations, especially for smaller enterprises. Where IS is disruptive to the status quo, there are bound to be conflicts and redistributions of power. In SMEs, it is important to realize that the directions of these redistributions will typically have already been set in motion prior

to the onset of the IS project. Those that understand the potential effects of new IS can better position themselves to take advantage of them. At the management level, it is important to understand where the redistributions will occur ahead of time, so that appropriate steps can be taken to prepare and reassure, if necessary, those who will be affected.

Although we were able to accumulate a rich set of observations, it is possible that some findings relevant to the study were not uncovered. Perhaps the researcher simply had more exposure to some participants, or some participants may not have been fully forthcoming in discussions. We feel that the number and variety of interactions with the full range of participants has enabled us to overcome this possible limitation.

There are numerous opportunities for future research in this area. Although the cultural aspects of this project were discussed briefly, a full study of organizational and/or national culture on the success factors for enterprise projects in SMEs would be a useful addition to the literature. Likewise, extending this particular research into other SMEs in the same industry, in different industries, and in different organizational and national cultures, will also provide additional insight into the nature of power and IS.

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