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Marabelli, Marco and Newell, Sue, "Managing Loose Coupling in the Implementation of Large-Scale ERP" (2010). *ECIS 2010 Proceedings*. 102.

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Journal:	<i>18th European Conference on Information Systems</i>
Manuscript ID:	ECIS2010-0445.R1
Submission Type:	Research Paper
Keyword:	Enterprise resource planning, Knowledge management, Innovation, IS success/failure



MANAGING LOOSE COUPLING IN THE IMPLEMENTATION OF LARGE-SCALE ERP

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Abstract

This paper presents a case study of implementation of a complex ERP by a worldwide company with headquarters in the US (Iris Co). Organizational units are represented as systems which interact in the process of technology appropriation. We study the interactions between the implementation of large-scale IS and management of the tradeoff between non-coupled vs. tightly coupled systems. We focus on the process and the dialectic of loosely coupled systems as a way to balance efficiency and flexibility when organizations are required to achieve efficiency through centralization and control at the expense of autonomy and flexibility. Our findings highlight the importance of developing learning skill for achieving this balance.

Keywords: ERP implementation; project management; loosely coupled systems; tightly coupled systems; interpretive case study.

1 INTRODUCTION

Large firms operating in a single business are often composed of multiple units. The organizational units typical of a large, U-form, organization are Sales, Distribution Channels, Research and Development (R&D), Finance, Information Technology (IT), and Business. While the competences and experience of the people employed in the different units are diverse, the aim of the vice presidents of these units should be to integrate their objectives for their units –e.g. in terms of strategy, technology adoption, human resources management –with a strategy that leverages the performance of the overall organization to achieve optimum performance in terms of both production and revenue (Hart, 1992; Tushman and O'Reilly, 1996).

Although managing differences is always problematic, it has been acknowledged that young organizations are more likely to experience difficulties in integrating diverse perspectives – especially in critical circumstances (Hitt and Tyler, 1991). For instance, scholars have highlighted the conflict between IT and business, and there are many theories on alignment (Luftman, Kempaiah, and Nash, 2005) that highlight the importance of business understanding the potential from information and communication technologies (ICT) and vice-versa (Mc Lean and Soden, 1977; Henderson and Sifonis, 1998). Moreover, in firms where sales lead the business, it is often hard to balance the *de facto* power of the Sales department with that of other more strategically oriented departments which may not seem to be so directly linked to financial outcomes (e.g. R&D and IT). Finally, politics and power influence the relationships and the balance between different units (Pfeiffer, 1984), sometimes for no precise or apparent reason (Mosakowsky, 1987 Pfeiffer, 1977).

We point to the problematic equilibrium between firm's units –and their resulting loose or tight relationships –as a major factor in organizational success and performance. Starting from the theory of loosely vs. tightly coupled systems and the work of Weick (1976) and Orton and Weick (1990), we present a case study of a multi-unit firm which deals with the tensions involved in differentiating –in terms of their visions and perspectives, and integrating –in terms of collaborating (Lawrence and Lorsch, 1967), in order to achieve consensus on an internal organizational view of technology and its appropriation. The case study describes a worldwide organization (Iris Co.), involved in the implementation of a complex Enterprise Resource Planning (ERP) system since 2001. As with most ERP implementations, it was necessary to change existing organizational work practices (Davenport, 1998). We argue that introducing ERP in an organization will be very complex as long as the different organizational units have their own visions and constructions of the system and how it should be exploited. The difficulty arises out of the need to share personal experience, beliefs, and points of view, a process of knowledge sharing that by definition is sticky (Szulanski, 2003) Thus, if different spheres of the organization are not able to communicate, integrating across unit becomes highly problematic. However, if the different units in an organization are too tightly coupled in a bid to pursue maximum efficiency, standardization of processes and activities may be at the expense of characteristics such as autonomy and flexibility.

Much has been written about the benefits of both loose coupling (Sambamurthy, Bharadwaj, and Grover, 2003; Weill, Subramani, and Broadbent, 2002), and tight coupling (e.g. Davenport, 1998; Volkoff and Strong, 2005). Perrow (1984) argues that tightly coupled systems will likely be more effective in situations where the patterns of activity are static, while loosely coupled systems are more likely to be effective when organizations need to adapt to external shocks. A few scholars focus on the tradeoff between efficiency and flexibility based on the degree of coupling (e.g. Sanchez and Mahoney, 1996) and especially the tradeoff in the dynamics related to the implementation of ERP (e.g. Gosain, 2004). Apparently, ERP implementation requires a tight coupling in some areas since it enforces the standardization of processes and leads to the emergence of best practice; on the other hand, the different existing organizational systems need to retain some autonomy and flexibility.

Our contribution in this paper is in studying how organizations manage this tradeoff when a new technology is introduced, and is aimed at filling a gap in the management literature and integrating

work on loosely coupled systems with research on ambidextrous organizations. We focus on the processes and interactions developed over time by the various organizational actors.

Our research question is: *How do organizations deal with loosely vs. tightly coupled systems when appropriating new technology?*

The paper is structured as follows: in Section two provides a review of the literature on loosely vs. tightly coupled systems and ambidexterity, highlighting areas of overlap. Section three presents the methodology –qualitative case study and the interpretation of facts to explain subjective phenomena. Section four presents our research findings and comments on them in the context of existing work. Section five draws some conclusion in the light of our findings and illustrates potential avenues for further research that might be implied by our study.

2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In order to understand *how* the different units in IRIS Co. used technology in managing the tradeoff between their greater connectedness and their autonomy, we draw on some of the loosely coupled systems literature (Weick, 1976) and integrate it with the literature on ambidexterity, which associates loosely coupled systems with organic structures that pursue exploration, and associates tightly coupled systems with mechanical structures that pursue exploitation (Tushman et al., 2006; Vinekar, Sinkman, and Nerur, 2006).

In terms of the literature on loose coupling we concentrate on Weick's (1976) seminal work, and the review by Orton and Weick (1990). While the idea of loose coupling was first mooted by Glassman (1973) and March and Olsen (1975), its conceptualization –a “formal” view of organizations as loosely coupled systems –was made by Weick in 1976 (*Educational Organizations as Loosely Coupled Systems*, *Administrative Science Quarterly*). The transition from loose to tight coupling can occur among individuals, organizational units, organizations, hierarchical levels, organizations and environments, and among ideas, activities, and interactions and actions (Orton and Weick, 1990). Loose coupling underpins the concept that coupled events are responsive, but that each event preserves its identity and evidence of its physical and logical separateness. Orton and Weick (1990) highlight the concepts of responsiveness and distinctiveness to explain when systems can be considered coupled (or not). When neither responsiveness nor distinctiveness is present then it is a noncoupled system; when there is responsiveness but not distinctiveness it is a tightly coupled system; when there is distinctiveness but not responsiveness it is a decoupled system. Finally, when both distinctiveness and responsiveness are present the system is loosely coupled. The concept of loosely vs. tightly coupled systems, then, involves the contradictory idea of connecting multiple systems –at the expense of organizational flexibility, *or* giving autonomy to such systems –at the expense of organizational efficiency. The literature that discusses this dilemma in the context of organizational structures and mechanisms, e.g. Burns and Stalker (1962), focuses on organic vs. mechanic organizations, while Lawrence and Lorsch (1967) focus on middle management as the means to integrate dispersed organizational units when it is necessary to differentiate to face dynamic environments. However, adopting Weick's (1976) view, the dilemma and its resolution involve behavioral and social aspects rather than organizational mechanisms and organizational design issues more generally. Orton and Weick (1990: 205) posit that “any system, in any organizational location, can act on both a technical level, which is closed to outside forces (coupling produces stability), and an institutional level, which is open to outside forces (looseness produces flexibility)”. And, basing their claim on reflections in Das (1984), they argue that “the dialectical interpretation of loose coupling builds on and extends these arguments by juxtaposing both forces, simultaneously, within the same system” (Orton and Weick, 1990: 216). Both these quotes highlight the linkage between loose coupling –which we see as dialectic between rationality and indeterminacy –and the recent stream of literature on ambidexterity, where ambidextrous organizations are defined as those that follow a strategy of *simultaneously* pursuing exploitation and exploration *in-house* (Gibson and Birkinshaw, 2004; Tushman and O'Reilly, 1996).

According to March (1991: 71) “exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation; exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution”. Vishnu and colleagues (2006: 35) point out that “exploration is associated with organic structures, loosely coupled systems, path breaking, improvisation, autonomy and chaos, and emerging markets and technologies; exploitation is associated with mechanistic structures, tightly coupled systems, path dependence, routinization, control and bureaucracy, and stable markets and technologies”. Also, Vinekar, Slinkman, and Nerur (2006), following O’Reilly and Tushman (2004), highlight that “the ambidextrous organization has subunits that are highly coupled within subunits and loosely coupled across subunits but are tightly integrated at the senior executive level” (Vinekar, Slinkman, and Nerur, 2006: 36). Our analysis starts from the point that dialectic develops between organizational units, and that, on the one hand, we acknowledge the tendency for management to connect different structures (e.g. Orton 1989) for the sake of rationality and efficiency, and on the other hand, the idiosyncratic need for such structures to develop projects autonomously, to retain flexibility. We would argue that technology plays an important role in helping organizations to achieve the right balance between the tendencies towards coupling vs. decoupling among different systems. Our study of technology in organizations concentrates on ERP implementation; thus, we observe *how* the introduction of technology (in our case in a so called “legacy system”) can affect the conflicting needs to become efficient and flexible.

This is an interesting topic because whilst introducing ERP might be straightforward from a technical point of view, exploiting its potentials is less so but is crucial (Duplaga and Astani, 2002; Holland and Light, 1999). Several scholars have demonstrated that ERP implementation often fails (Scott and Vessey, 2002; Soh, Klein, and Tay-Yap, 2000). What we argue is that a contributory factor in failures in the appropriation of technology by organizations may be the conflicting demands of efficiency achievement (through the rationalization of organizational processes) *and* maintenance of a degree of flexibility (creating spaces for independence and autonomy). On the one hand managers may be drawn to working on processes to merge existing organizational knowledge and experience, and pursue efficiency but through greater rigidity and control. Those characteristics tend to be associated with standard ERP systems “promoted as systems that will improve organizational efficiency through both enhanced information capture and organizational redesign around defined best practices” (Newell et al., 2003). On the other hand, new knowledge (necessary for the organization to survive) is more likely to be captured with less rigid systems and informal and flexible practices (Starbuck, 1992). This suggests that ERP implementation depends on the ability of organizations to deal with the simultaneous need for efficiency and flexibility (Marabelli and Newell, 2009). Efficiency is related to tight coupling of organizational units while flexibility is related to loose coupling of organizational units. The ERP system in our case is a Customer Relationship Management (CRM) system. CRM systems are defined as ERP modules that specialize in capturing, integrating, managing, and analyzing customer data, such as how and when a particular customer interacted with the organization. CRM systems integrate and synthesize a broad array of activities related to customer services, sales, and marketing (Mankoff, 2001). Thus, CRM technology is viewed here as providing the technological ability to channel knowledge towards the codification and rationalization of its content (e.g. explicit knowledge). However, organizations are also required to assimilate and draw on informally developed knowledge that is not systematically retained and managed (e.g. tacit knowledge). Consequently, we highlight the dichotomy between efficiency and flexibility (loosely vs. tightly coupled systems) with the necessity for an organization to exploit existing processes and activities and to explore new and radical processes and activities (ambidextrous organizations).

3 METHOD AND METHODOLOGY

Our case study company, Iris Co., is a global company with headquarters in Massachusetts, USA, which sells product development technologies to various manufacturing firms. Our study starts in 2008 while we acquired documentation starting from 2001, when Iris Co. decided to introduce a third

party CRM system in order to improve the efficiency of its processes across organizational units. Our epistemological position (interpretive) leads us to assume that reality, including the domain of the organizational actors, is a social construct (Walsham, 1993). Thus, our objective is to collect data from disparate sources to provide “stories” of ERP implementation at Iris Co. The phenomenological contribution of our paper is not a robust story in terms of triangulation of different versions of it, but the apparent inconsistencies between different points of view that we consider subjective constructions of reality. We use the different meanings of technology provided by different organizational actors to point out that appropriating ERP is an unpredictable and iterative process of consciousness raising about technology not being an objective artifact that represents an organizational tool and more a means of sharing and channeling diverse knowledge, namely diverse facets of the same entity. Thus, our findings are related to our interpretations of the case study and are aimed at encouraging further research in this area, rather than being generalized across the broad realm of organizations that face the tradeoff between tight vs. loose coupling.

We present a qualitative analysis and interpretative case study of Iris Co. using data from 2001 to present. Thus, the case study is both longitudinal and retrospective. Following Avison and Fitzgerald (1995) we believe that the ongoing process of implementing an ERP system continues throughout the life of the system and evolves with the organization. This is consistent with the idea of growth and emergence of IT systems as opposed to design (Truex, Baskerville, and Klein, 1999). Thus, we see implementation as an ongoing process and iterative activity that follows the changes and transformations in organizations. Our qualitative approach to loosely coupled systems is also motivated by Orton and Weick’s (1990: 219) suggestions that “the dialectical interpretation of loose coupling can be strengthened when researchers look closely at the processes within systems. For example, ethnographies, case studies, and systematic observations (Rubin, 1979; Thomas, 1984) are methodologies that encourage this careful analysis, whereas questionnaires and casual observations (Firestone, 1985; Lutz, 1982) are methodologies that tend to discourage it. The relevant criterion is familiarity: Will researchers describe the processes within the system or will they simply categorize systems? To preserve the dialectical interpretation, greater familiarity with a few systems is currently more valuable than lesser familiarity with many.”

The research design involved a team working in the field for more than one year, conducting interviews and observing the organizational actors at Iris Co. A few interviews were conducted over the phone (approximately 3% of the data); all observations were “live” and involved members of the research team. The research design involved two main phases: first we gathered documentation (slides, project documents, syntheses) from meetings held between 2001 and 2008. This formed the basis of our writing the “story” of the company and helped to identify the key people and events that became milestones for Iris Co. in the implementation of Smart-CRM. Second, we conducted focused interviews and direct observation of meetings. Interviews were structured to allow interviewees to tell their versions of the story –of what happened on certain occasions, perhaps related to particular events such as the go-live phase in a specific department, the implementation of certain modules, the choice to customize rather than to implement a vanilla system. Although our information was from a number of sources of data, we were not aiming at identifying the “true story”; based on our interpretive perspective, we were interested in different subjective perspectives of the same fact. So far eight interviews and seven observations have been analyzed (involving 400 pages of transcription and more than 500 slides). Both interviews and observations lasted approximately 1.5 hours each. We recorded and transcribed the interviews and working committees. To code the data we used NVivo 8.0. The research project is ongoing and we are continuing to collect data in order to deepen our study and enrich and update our findings.

4 RESEARCH FINDINGS AND DISCUSSION

The Sales Department Manager in 2001, Eric, explained in an interview that the decision to implement a CRM system was based on the fact that Iris needed an ERP system that would integrate its branches worldwide to help sales forecasting. In 2001, the whole company was experiencing problems with data

management. Some employees were using spreadsheets, such as MS Excel; a few were working in MS Word; some had standalone, individual databases; and a minority was able to use Oracle. This introduced inconsistencies in the data being recorded and made it difficult to make realistic sales forecasts. Luke, part of the technical implementation team at that time, explained that in 2001 sales forecasting was important to compete in an environment that was becoming more complex and dynamic. Amy, who was responsible for managing the project and currently manages the cross functional team working on the ongoing implementation and maintenance of the CRM system, told us that in 2001 many high tech companies, and especially those with international branches, were adopting these systems. Iris chose Smart-CRM because, according to Luke, in 2001 the Smart-CRM was the most popular and was considered the only one system that could accommodate different languages in a single database (such as Unicode support).

In 2001, Iris Co. was a multi-unit company with a flexible and unbureaucratic structure, whose departments included Sales (fundamental since the company's core business is selling high-tech products), Marketing, Channels, Finance, R&D, and IT. Rick, a manager from the Sales Department told us that in 2001, although the company was working well, the business side recognized that a system was required that could integrate data –especially for sales forecasting where there were some problems.

Well, I guess if you think about (the past). We didn't really choose a CRM, we chose to get a forecasting tool. So we had a manual forecasting process that was done through Excel. And we missed a quarter, so we said we were going to do \$100 million in revenue and we did \$90 million in revenue. So the company said, "Boy, your process to forecast needs to be improved. And, so, therefore, we think you need to have a better forecasting tool and a better forecasting process and discipline."

Edward, a Marketing Department manager, underlines that the idea to implement a CRM emerged at a time when the company was growing very fast which was highlighting the need for a more reliable system, since the market in the 2000s was increasingly competitive.

So the forecasting accuracy and pipeline forecasting and so on and so forth was actually not all that critical. It was managed very manually: spreadsheets, voicemails, conference calls, whiteboards. That was the forecasting process. And even as you got toward the tail end of that 10-year period, you've got a billion dollar company who is still running very manual processes based on spreadsheets and whiteboards. [...] The business had been very, very good for us, so the forecasting accuracy, you know, if a sales guy was going to do 200% goal or 220% goal, it didn't really matter that much. He was just going to be way over his number. So forecasting accuracy when the business is that good, you get a little bit of a pass on forecasting accuracy. [Then], we were growing so fast that the business systems couldn't really keep up. [...] When I joined the company in 1989, we had 60 employees. In the year 2000, we had 5000 employees. So to be thinking about how to rollout enterprise systems and enterprise processes and everything during that growth period was crazy, it was hard. So the primary reason we decided we needed a CRM tool was really the next period of [Iris'] life, which was when the business was going down. All of a sudden, forecasting became critically important.

Sales and Marketing were integrated as, Edward told us.

I think the initial selection of [Smart-CRM] at the time was probably the right one because the level of integration between the sales force side of the house and the marketing side of the house was actually quite tight because it was all one big integral system. So that's why we picked [Smart-CRM] marketing.

However, the Channel department was decoupled from Sales and Marketing and Luke underlined that:

The Channel organization was doing okay, but they weren't talking to marketing and they weren't talking to sales. So coming through and putting together a group that was going to go and focus on, "Okay, how are we going to do this? [...] How do we have a cross-functional group that is going to be responsible for this?"

Luke also said that:

Basically you would customize it for four or five different sales groups but they weren't really going to use it making it hard to do reporting and to get an insight into what was going on at the different customers.

The above extracts show that in Iris Co. in the 2000s it was not just different organizational units which were decoupled but even e.g. within Sales there was decoupling. According to the theory developed by Thompson (1967) Iris Co. is both determinate, with some closed systems searching for a rationale, and indeterminate, with some open systems expecting uncertainty. However, loose coupling theory is not limited to an organizational view where rationality and indeterminacy are pursued in different organizational areas (e.g. Thompson, *ibid.*, argues that the only way to capture those two incompatible concepts is to separate their locations). On the contrary, loose coupling theory assumes that rationality and indeterminacy can exist simultaneously “without specializing those two logics in distinct locations” (Orton and Weick, 1990: 204). Thus, loose coupling captures both the concepts of rationality and indeterminacy depicting an organization as “*a system that is simultaneously open and close, indeterminate and rational, spontaneous and deliberate*” (Orton and Weick, 1990: 204-205). Thus, our first finding is that, in Iris, decoupled systems affected the implementation of a system, which requires a certain degree of coupling; systems that are not heterogeneously coupled can affect the implementation of cross-organization technologies such as an ERP. Luke told us that “In each organization we had a silo of groups that are thinking about each of their organizations”. In fact, the first go-live of Smart-CRM was a failure. As Luke underlines, whereas the technical implementation was successful (e.g. they had introduced a lot of customization) employees were not ready to use a system whose aim was to integrate data from disparate sources: “We implemented this highly customized thing that these guys [system designers] thought was fantastic, but nobody used it”. Edward –from the Marketing side –points out also that although the system was working well from a technical perspective, nobody could use it:

And I think that the individuals up there were willing to learn, but it was overhead, it was that they don't really have the time. There was a lot of complaining that was going on for a 2-year period because we were going down this initial thought of let's jam it home on them. Let's make them use it. There was a lot of complaining going on saying, “We do not like this system.”

Apparently, one of the main reasons why Iris Co. did not give up on the implementation of Smart-CRM was that they had invested a lot of money in purchasing the software. As Edward said:

You built it as a management tool, but don't give up yet. Hang in there. [...] but we've invested in a team, we've invested in a technology, we've invested in B&B and tying the things together from that perspective, and we know that it's the right thing to do and it's going to help, but ... [...] “Our return doesn't feel anywhere near close to it. What's up?” They did go back and look at it, but there wasn't any. I was, “Holy mackerel, we spent a lot of money.” Nobody seemed to know what the hell we'd done. I was on the development team at the time and it was like, “Okay, how are we going to turn this into something we're going to use?”- There were lots of conversations about that.

After a few years (in 2004-2005) Iris started rethinking its initial implementation of Smart-CRM and management began to acknowledge that mistakes had been made. For instance, in order to accommodate the needs of the Sales Department, which has a lot of power in the organization, too much customization had been introduced in this direction, at the expense of other departments. Bob, a manager from IS argued that:

So I think one of the big lessons learned from our first implementation was starting out with all those customizations makes it a bear to try and do an operate or a patch or get support or any of that kind of stuff [...]

Then, in the initial phase of the implementation some departments (especially Business) were pushing for short-term financial results. However, with time they came to realize that a short-term financial index such as ROI (Return on Investment) is not useful to measure the impact of ERP implementation, which requires a long-term vision. As Luke commented:

We were talking about ROI and quality, and the head of marketing said, "Don't waste your time. We know it's going to help. It's going to be hard from a marketing ROI perspective, but it's only going to help them get their job done better. Let's just go do it."

Another tradeoff that emerged from our analysis of the stories related by Iris Co. interviewees was the decision to implement Smart-CRM within a business oriented vs. a user oriented perspective. The business side was pushing the technical department to implement the system in order to achieve efficiency, but without considering the needs of the users (e.g. running User Acceptance Tests, training the users, letting the users understand why a new technology was to be implemented in the organization). Luke, again, explained to us that:

The problem was that we went and implemented a tool for managers not end users. So the end users didn't use it, so the managers didn't benefit. So we ended up vacuuming out a bunch of baloney that we'd put in there to make it easier for both folks could use it.

The three tradeoffs (customizing vs. configuring the system; concentrating on ROI vs. focusing on the long term benefits of technology; paying attention at the management level vs. paying attention at the user level) represent the tensions between the explicit need for Iris to pursue efficiency –a lot of customization to achieve short-term and tangible financial results –and the implicit need to take account of the less obvious and more intangible objectives such as the users' appropriation of the system. While short-term concrete objectives are more likely to be achieved within rational and tightly coupled systems, long-term and more behavioral objectives (e.g. seeking acceptance of the ERP from users) are more likely to be achieved within less determined and more loosely coupled systems. After 2005 Iris Co. was finally able to fully implement its Smart-CRM –e.g. it was able to implement the systems in all the departments, users were able to understand the importance of the technology e.g. to enable centralization of information which was then accessible to all organizational units. Iris had to resolve some internal conflicts and conduct an accurate process analysis. In terms of coupling systems, on the one hand Iris had to figure out that in order to implement an ERP, management needed to consider the organization as a whole and not as just as the sum of the various departments with weak connections. On the other hand, management had to consider the need for the organizational units to retain some autonomy, the key to some of past success of the company, when the organization was de-structured and there were no legacy systems to manage processes and activities (e.g. pre-2001, the company was able to make profits from exploiting characteristics such as flexibility and fast response despite the use of manual system to collect data). Edward described the period before 2001 for Iris:

This was after a period of the first ten years Iris' history we really -- In 10½ years, we had 42 consecutive quarters of increasing revenue and earnings growth and never missing".

We also found evidence that people in Iris were reluctant to lose their autonomy and were not in favor of tighter coupling of departments. For instance, as Rick told us:

The sales persons also say that it's one of those things where if you put it in, then it's inspected, it's the big brother viewpoint. They can look over your shoulder and see what you're doing. So if it doesn't drive any value to the sales rep in the sales rep's viewpoint So adoption has always been a little bit tricky for us.

Thus, the challenge for management was to deal with the need to modify existing processes that were flexible but couldn't guarantee a linkage between different organizational units while introducing an

ERP, which can increase the efficient flow of information across organizational units, but which can also be a source of idiosyncratic rigidity. Management attempted to respond to this challenge by conducting a process analysis across departments to understand data flows and central management of information. Luke told us that, after the initial phase:

The idea was that each of those functions or processes that happens in each of those areas and really have one central CRM solution that allows that [the system to work and to be appropriated by the employees] to happen. [...]

Seven years later, Smart-CRM was being exploited by the whole organization. As Rick told us:

We have people who are using Smart-CRM who are really committed to Smart-CRM. The Marketing team really wants to use Smart-CRM. It really helped them take these leads and push them out to the channels. They're very motivated. So you have a large group of people who are highly motivated. You have the Channel team that's highly motivated. You have IT that's highly motivated. They are all motivated for different reasons. IT, you know, I can't imagine them getting any great joy out of implementing Smart-CRM. It doesn't do anything for them. It doesn't give them any kind of job security because they have a backlog of work to do, so they can be working on anything. I think, for them, they're highly motivated because they don't want to fail. They don't want the implementation to fail because they are the first group they are going to blame. So they are motivated through fear of failure.

Currently, Iris is in the phase of different organizational units implementing complete immersion in the system (e.g. use on a daily basis) and of users appropriating different modules of the software that will enable integration of their unit specific data with the data from other units, and also will enable individual organizational units to retain some autonomy in terms of responsibility and span of activities. All the company's departments are working in the same direction –towards efforts to integrate data and processes –and paying attention to preserving a certain level of autonomy. Rick described the situation as follows:

So we'll have to go and see if this thing really works out. I think it will because there's enough people tied in the process. But will all components be successful? I'm not really sure because the big thing now is do we have enough people that are motivated to really pay attention to it and really use it quite a bit. I think Marketing will be successful. I think in the Channel operations side, there's a great chance they'll be successful, but they need to build a team now around this to make sure that people are really focusing on Smart-CRM and really using this lead to order component. So that's really important. [...] So we have people who know what to do. So it's an enterprise system now that we all understand. We're just smarter about it.

The different organizational units are collaborating for a common aim, as Edward said:

I think we did a better job at getting cross-functional involvement, you know, everyone from IT to finance and sales and marketing, etc.

To return to our research question, we wanted to understand how people from Iris Co. were able to deal with an initial failure in implementing the new system, how they handled the need for autonomy in organizational units and the requirements of an ERP to concentrate and rationalize processes and information. Apparently, the process analysis that was conducted by management helped to determine how the system should be introduced and would operate in the various departments (e.g. adapting the CRM interfaces to the needs of the users, resolving the tradeoff between customization and configuration of the system). However, deeper analysis of our interviews and observations highlights that a number of non-technical issues influenced achievement of a balance between exploring a new ERP –so that every organizational unit could appropriate the system autonomously, and exploiting its potential –which meant concentrating information and pursuing efficiency. Firstly, negotiation between the vice presidents of different departments was crucial for agreeing on the degree of autonomy to be retained and the level of acceptance to the sharing of information with other units. As

Luke underlines “it was a constant negotiation [...] to continue to enhance the functionality of it.” Moreover, the three tradeoffs we have described were discussed and elaborated as part of a long-term learning process, before they were resolved. Secondly, we noted the importance of the role of the business side in disseminating a culture of efficiency and continuing flexibility. For instance, Rick was keen to obtain the commitment of employees saying that: “I think it will because there’s enough people tied in the process.” Again, Eric underlines the importance of user commitment in talking about the departments in Iris:

When you roll out a project, part of it is internal user perception. Right? So, there’s actually a marketing campaign that needs to happen around CRM. Right? There’s marketing, there’s general communication, there is a whole bunch of technical stuff that happens in the background.

Our findings on the importance of negotiation and the organizational culture are consistent with the literature that focuses on the reconciliation between flexible and efficient systems. For instance, Jansen et al. (2009) demonstrate that socially integrated senior teams, which facilitate ambidexterity, are associated with negotiation activities –a line of thought that is consistent with Pfeffer (1995). Compromises and collaboration between organizational units in order to achieve common aims are also acknowledged (Michel and Hambrick, 1992).

In terms of leveraging the organizational culture to achieve a balance between the autonomy and connectedness of organizational units, we can see that Iris Co. had some difficulty in recognizing that centralizing some information at the expense of autonomy was necessary in order to face the new competitive environment. However, consistent with O’Reilly and Tushman (2007: 40), the capability to manage those antithetic organizational needs (ambidexterity) “helps organizations sense and seize new opportunities and to mitigate the effect of path dependency”. We also see Iris Co.’s management understood that leadership and commitment were crucial to achieve equilibrium between flexibility and efficiency. Again, as O’Reilly and Tushman argue (2007: 45) “the strategic contradiction [between flexibility and efficiency] can be resolved by senior leaders who design and manage their own processes and, in turn, ambidexterity.” The lessons learned by Iris (e.g. the management of the three tradeoffs) show that is impossible to construct in advance a set of best practices to deal with conflicting forces (insularity of organizational units vs. the need to connect such units). Consistent with Winter (2000), the capability to reconfigure organizational roles is a capability equivalent to *ad hoc* problem solving where management is able to solve problems on a one off basis by setting up a successful venture.

Ultimately, we explored the dialectic of coupling between organizational units, highlighting the links between the tensions in the different systems to be decoupled and the need for firms to have tightly coupled systems. Drawing on the ambidexterity literature we translated the lines of thought in Weick (1976) and Orton and Weick (1990) and highlighted that the continuum between exploratory activities, which require flexibility, and exploitative activities, which require efficiency, is fairly comparable with the continuum between noncoupled systems (where neither responsiveness nor distinctiveness are present) and tightly coupled systems (where responsiveness dominates). Our retrospective and longitudinal study allows us to argue that the process of identifying the right way to manage the exploration vs. exploitation tradeoff requires time, creation of an organizational capability –which, according to O’Reilly and Tushman (2007) is dynamic –and that, as exemplified by our case study, such capability allows firms to “learn-to-learn” and can be used to promote exploration and exploitation (Daneels, 2002).

5 CONCLUSIONS

This paper contributes to the knowledge of how managers deal with the conflicting demands of organizational efficiency, pursued with the standardization of processes and the identification of best practices, and the need to maintain a certain degree of organizational flexibility, which involves autonomy and improvisation. From our theoretical perspective we linked this concept to the theory of loosely vs. tightly coupled systems and we identified some areas of overlap e.g. flexibility is achieved

as long as different systems in an organization are at least loosely coupled. However, there are also sources of contradiction when efficiency needs to concentrate information and the result is that systems become more tightly coupled and so less adaptable. In analyzing our findings we concentrated on *how* Iris Co. resolved the tension between efficiency and flexibility by managing the degree of connectedness of different organizational units. We highlighted that the introduction of ERP in Iris required greater coupling since it was being introduced to a context where the departments were only loosely decoupled (but successful). However, this was achieved more through processes of trial-and-error learning than a pre-formed plan. Our analysis of the dynamics in Iris is consistent with the approach to loosely coupled systems provided by Weick (1976) –namely we made use of dialectic and portrayed loosely vs. tightly systems as opposing forces that needed to be negotiated. In sum, we recognize the importance of issues such as negotiation and dissemination of organizational culture by the management as a means to achieve some equilibrium between efficiency and flexibility. This is also consistent with the recent literature on ambidextrous organization which highlights the importance of managerial characteristics such as senior leadership and capacity to communicate plans and objectives (O’Reilly and Tushman, 2007; Teece, 2006).

In terms of our research method we understand that –consistently with the methodology suggested by Orton and Weick (1990) –a qualitative approach is more likely to focus on processes and dynamics that underpin the conflictual needs of organizations to pursue efficiency and flexibility. Thus, we encourage scholars to deepen this research stream with case study research in order to extend what we have found in our field work. Moreover, we believe that participant observations and comparison across multiple case studies should represent meaningful contributions to the knowledge of how conflictual dynamics are managed. Finally, we argue that using an interpretive and process-oriented approach to case study analysis can help our understanding of a number of inconsistencies in the literature that pretend to operationalize variables that affect such processes to predict outcomes and to define *a priori* best practices.

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