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Organizational Learning and Absorptive Capacity in Managing ERP Implementation Projects

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Completed Research Paper

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Abstract

In this paper we focus on large-scale IS implementation using the lens of absorptive capacity. Our case study concentrates on the double loop learning process that occurs over the implementation phase of ERP which we depict as a series of learning cycles. From this perspective, ERP implementation is best viewed not as a one-time process but rather as a series of implementation and practical use cycles. Our results highlight that the learning process requires the accumulation of knowledge, a long-term perspective, and phases of explorative and exploitative learning that overlap. This learning process requires a) the development of specific organizational capabilities which allow organizational actors to "accept" and assimilate external knowledge, b) the understanding that such capabilities should be developed over time, and c) the capacity to explore and exploit knowledge simultaneously. Suggestions are provided for future field research on absorptive capacity in the realm of the qualitative research.

Keywords: ERP Implementation, Absorptive Capacity, Organizational Learning, Qualitative Method.

Introduction

Enterprise Resource Planning (ERP) systems are based on developing a common IT infrastructure and common business processes that will support the integration of the entire business activity of an organization (Markus, Tanis, and Fenema, 2000). Use of ERP has spread rapidly since the late 1990s – especially in large organizations where the need for efficiency and effectiveness of processes is crucial. Exploiting the benefits from an ERP through an effective implementation process is considered crucial (Duplaga and Astani, 2002; Holland and Light, 1999). However, research has demonstrated that ERP implementation is often very difficult (Scott and Vessey, 2002; Soh, Klein, and Tay-Yap, 2000). Moreover, the 'best practice' component in ERP does not fit many organizations (Wagner and Newell, 2004; Kallinikos, 2004).

From a project manager's point of view, the most important consideration in implementing an ERP is a clear strategy and an associated implementation plan (Mandal and Gunasekaran, 2003). Nevertheless, empirical work has demonstrated that it is difficult to build up an *a priori* strategy for ERP implementation so that some scholars have focused on developing a descriptive analysis of *to-do* lists to sort out problems after the go-live phase (Holland and Light, 2001). An alternative approach, and the one taken in this paper, is to focus on issues which might influence or contribute to implementation *process* effectiveness (Nicolaou, 2004). We draw on the latter stream of research and focus on how managers deal with user behaviors, social practices, and negotiations between business owners and the IT department when organizations are implementing an ERP. We adopt a structuration perspective in the sense of recognizing the recursive interactions between people, technology, and social actions (Orlikowski, 2000), and from this develop our theoretical framework which builds on literature associated with organizational learning. However, while adaptive structuration theory (DeSanctis and Poole, 1994) starts from the assumption that appropriation of technology occurs when people select technology, we consider the use of technology not as an appropriation but as a translation (Orlikowski, 2000) and an enactment (Weick, 1979).

More specifically, in this paper we make use of absorptive capacity as an analytical lens, conceptualizing this not as a sequential and deterministic process as much past literature (e.g. antecedents, exploration, exploitation, outcomes) but as an iterative process of interactions and learning by actors. Thus, we focus on the double loop learning process that occurs over the implementation and use phases of an ERP which we depict as a series of learning cycles: managers make decisions, identify mistakes, and accumulate experience (lessons learned). We argue that ERP exploitation is a process of continuous evolution with no final design being possible or warranted. From this perspective, ERP implementation is best viewed not as a one-time process but rather as a series of implementation and practical use cycles, each of which encompasses different degrees of reflection and learning such that the system becomes more embedded and better adapted to the context as the organization develops its absorptive capacity.

Our research is supported by a case study of a worldwide organization which has been involved in the implementation of a complex ERP from 2001 to today. As with most ERP implementations, the organization needed to change existing work practices to adapt to ERP (Davenport, 1998). In making these adaptations we have recognized that managers faced multiple tradeoffs that characterize the tension between what business managers want –in terms of short term and tangible results –and the idiosyncratic needs of an ERP implementation –in terms of UAT (User Acceptance Tests) tests, long term dissemination of a "culture" of the new IS, and adaptation to the different conceptual approaches to the technology. We interpret the tradeoffs as reflecting the tension arising from the need to balance the organizational drive for efficiency with an ERP while at the same time needing to constantly adapt to changing circumstances, which requires flexibility. Examining the tradeoffs with the absorptive capacity lens, such tensions are not viewed as sequential, as Zahra and George (2002) have assumed, but rather are viewed as double loop processes that involve recognizing new knowledge while continuing to use existing assimilated knowledge. Accordingly, we depict the implementation of an ERP as an ambidextrous process of learning that occurs as the organization builds up its capacity to absorb knowledge about and from the ERP.

In terms of our contribution, we firstly develop a processual view of absorptive capacity, where human actions, the technology, and its use are interacting (Barley, 1986; Orlikowski and Robey, 1991; Walsham, 1993). Thus, we aim to focus on the process by which absorptive capacity is developed and used rather than on its antecedents and outcomes. In doing this we examine the joint activities of knowledge exploration and exploitation and thus make our second contribution, which is to consider the interactions of two issues related to absorptive capacity - knowledge and experience –but without viewing them as variables that create absorptive capacity, In other words we argue that

these issues are two necessary but not sufficient characteristics of the capability to recognize, assimilate, and exploit new external knowledge (Cohen and Levinthal, 1990). Our arguments allow us to answer the following research questions: *how do organizations learn to both explore and exploit the benefits from an ERP system over time and what is the role of absorptive capacity in this process*?

The paper is structured as follows: in Section two we provide a literature review of both ERP implementation and absorptive capacity. In Section three we introduce the case study, presenting a narrative of the company from 2001 to present and we describe the methodology used. In Section four we present the qualitative results of the study and in Section five we discuss the case study and integrate our empirical results with existing literature. In Section six we highlight the limitations of our study and we offer some suggestions for further research based on our findings.

Literature Review and Theoretical Framework

ERP systems are packaged software that integrates processes, activities and disparate data from multiple departments (Davenport, 2000). They generally have some built-in standard functionalities which fit most organizations. However it is often the case that an ERP requires specific modification (i.e., customization) to adapt to specific organizational processes. The main reason for the popularity of ERP systems is that they are perceived to improve both productivity and speed (Davenport, 1998). Their successful incorporation potentially brings huge economic benefits to firms, such as reduced cycle times, faster transactions, better financial management, and a foundation for the implementation of e-commerce, knowledge documentation, etc. (Davenport, 2000). However, while potentially ERP systems can help to improve organizational performance, many firms are unable to fully exploit this potential and realize all the benefits (Stein, 1998). In this paper we focus on some of the ways in which problems that can arise in the implementation (for the first time) of an ERP system may be overcome.

Much of the research presents ERP implementation as a sequence of linear phases, beginning with preparation and ending with actual deployment or go-live. This linear view is based on traditional innovation diffusion theory (Cooper and Zmud, 1990) that sees ERP implementation as the end point of the diffusion of ERP throughout a user community. Markus et al. (2000) recognize that implementation is not the final phase, identifying a maintenance phase that captures the "onward and upwards" efforts of users as they learn to exploit the ERP system to support their work post- implementation. We focus here on these implementation and maintenance phases, using a processual perspective that sees these phases, or episodes, as iterative rather than linear (Elbanna, 2006).

ERP systems are adopted to improve efficiency, through improving how organizations use and exploit integrated information which is shared and managed across functions and locations. At the same time, however, implementing an ERP system also means changing the way organizations use information as a knowledge asset (Newell et al., 2003). In other words, while ERP requires a process of rationalization and exploitation of knowledge, at the same time, using ERP requires the modification of existing systems for sharing and using knowledge. This suggests that ERP implementation depends on organizations dealing with the simultaneous needs of efficiency and flexibility. Efficiency is likely to drive the implementation of an ERP in the sense of providing the rationale for its adoption and configuration. Flexibility is likely to be essential for developing the exploratory capabilities required to switch from a go-live mentality of understanding the basic functionalities to the full exploitation of its potential usability.

What we argue is that the development of learning capabilities is fundamental to achieve both characteristics within the firm. In this paper we aim to study such learning under the lens of absorptive capacity. The original construct was introduced by Cohen and Levinthal in 1989. Cohen and Levinthal (1989; 1990; 1994) found that individuals' learning is cumulative and that learning performance is greatest when the object of learning is related to what the individual already knows (Bower and Hilgard, 1981; Ellis, 1965; Ester, 1970). Extending these insights from the individual level to the organizational level, Cohen and Levinthal (1990) define absorptive capacity as 'the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends' (1990:128). Furthermore, the authors argue that organizational absorptive capacity 1) builds on prior investments in its members' individual absorptive capacities, 2) develops cumulatively and tends to be path dependent, and 3) depends on the organization's ability to share knowledge and communicate internally. Since Cohen and Levinthal's seminal papers there has been an evolving definition of absorptive capacity, its antecedents, and its outcomes. However, only a few researchers have tried to rebuild or improve the theoretical assumptions. Examples are: Dyer and Singh (1998) who, in marked contrast to the single-loop learning process (modifying actions) described by Cohen and Levinthal, view absorptive capacity as an 'iterative process of exchange' (modifying assumptions); Lane and Lubatkin (1998), who developed the idea of 'relative absorptive capacity', assessing the construct at the level of the learning dyad – where a firm's ability to learn from another firm depends on the similarity of the firm's

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knowledge base, organizational structures and dominant logics; Zahra and George (2002), who suggest that absorptive capacity has two general states of knowledge absorption - potential - when firms develop acquisition and assimilation capabilities and - realized - when firms develop transformation and exploitation capabilities; and Todorova and Durisin (2007), who focus on the 'efficiency of absorptive capacity', and introduce a framework that captures the dynamism of absorptive capacity through the addition of feedback loops. Although all those theoretical development are useful in order to better understand some characteristics of absorptive capacity, past literature focuses mainly on knowledge acquisition, with a lack of attention to how the process of learning originates and works. Empirical research follows this pattern. For example, Meeus, Oerlemans, and Hage (2001) focus their research study on the development of a theoretical framework that explains levels of interactive learning. They introduce new measures for the complexity of innovative activities and interactive learning, but they concentrate them in the R&D function, assuming that R&D intensity is the 'core' symptom of the absorptive capacity of a firm. Moreover, Mowery, Oxley, and Silverman (1996) focus on interfirm knowledge transfer within strategic alliances using patent portfolios. They argue that patents are good measures of the output of R&D activities that are – for the authors – the only way to measure absorptive capacity. However, even if R&D spending can be considered a proxy of absorptive capacity, the tendency is to treat absorptive capacity as a static resource and not as a dynamic capability. Moreover, as Lane, Koba, and Pathak (2006) highlight, the appropriateness and validity of using R&D intensity and patents as proxies is questionable, since the empirical evidence is contradictory. For instance, the empirical work of Tsai (2001) shows that interactions between R&D intensity (proxy of absorptive capacity) and network position has significant, positive effects on business unit innovation and performance. Consequently, he found support for the influence of R&D intensity in affecting innovation. On the other hand, studies that analyze the interfirm level make different claims. For example, Mowery and colleagues (1996), who present a study of over 9,000 alliances involving some 5,000 firms in many industries and countries, found that the R&D intensity doesn't affect the development of absorptive capacity if both firm-specificity and path-dependency don't exist. Also, Meeus et al (2001) didn't find support for their hypotheses on the relationship between absorptive capacity and interactive learning.

At the end of the day, although research studies of patents & absorptive capacity give us empirical elements to better understand both issues that might affect absorptive capacity (e.g. prior knowledge) and its output (namely, innovation), we have little information on 1) *how* the sharing of new knowledge happens, and 2) *how* it works outside R&D units. Consequently, focusing on research in R&D-related contexts has banished absorptive capacity to technology-intensive firms and researchers have focused on the knowledge recognition and acquisition dimensions, ignoring the extent to which knowledge is assimilated, disseminated, and used to innovate. In other words apparently researchers have mainly overlooked the issue of knowledge sharing within a firm, which we argue is a key problem in managing new external knowledge and improving learning capabilities.

While organizational learning is presented in the literature both as an outcome (e.g. Levitt and March, 1988) and as a process (e.g. Argyris and Schon, 1978), we argue that to better understand how such idiosyncratic capabilities are developed in order to achieve absorptive capacity in the long run, we need to focus on the processes that define the learning. Thus, we focus our attention on the process which is characterized by two main learning activities: knowledge exploitation which requires efficiency and knowledge exploration which requires flexibility. Moreover, we argue that the two characteristics must overlap instead of representing a sequence of phases of exploration and exploitation, as depicted by Zahra and George (2002).

The problems related to *how* to achieve both efficiency and flexibility within an organization are well known, and scholars distinguish between exploratory activities, which include things such as search, variation, risk-taking, experimentation, play, flexibility, discovery, innovation, and exploitative activities, which include things such as refinement, choice, production, efficiency, selection, implementation, execution (March, 1991). In the last two decades ambidexterity has been considered through many different analytical lenses: scholars have focused on organizational learning (March, 1991; Benner and Tushman, 2003; Gupta et al;, 2006; He and Wong, 2004), technological innovation (Abernathy and Clark, 1985; Dewar and Dutton, 1986; Tushman and Anderson, 1986), organizational adaption (Leana and Barry, 2000; Probst and Raisch, 2005; Volberda, 1996), and organizational design (Burns and Stalker, 1961; Duncan, 1976; Raisch and Birkinshaw, 2008; Thompson, 1967). However, only a few studies could be found which have linked absorptive capacity to ambidexterity (e.g. Jansen, 2005, Unpublished Dissertation and Jansen, Van de Bosch and Volberda, 2005, and Rothaermel and Alexandre, 2009). Moreover not all of them have an explicit focus on the tension between the two components of absorptive capacity, as depicted by Zahra and George (2002). Moreover, the few studies that have been done focus on the antecedents of absorptive capacity (e.g. organizational mechanisms),on its outcome (that is, innovation, using tangible measures such as

patents and, in turn, financial performance), or scholars view absorptive capacity as a moderator of ambidexterity, neglecting the intervening processes, as with most research using the absorptive capacity perspective. In turn, while recent studies on ambidextrous organizations have moved their focus from inputs and outputs to processes (for recent works see O'Reilly and Tushman, 2007, while past studies can be found also in Adler et al., 1999, Burgelman, 2002; Tushman and O'Reilly, 1996), absorptive capacity literature is underdeveloped from a process perspective (as documented in the review from Lane et al., 2006), and scholars keep trying to find a measure of such capability based on what the capability produces (that is some kind of innovation).

To address this gap, in this paper we focus on understanding how absorptive capacity is developed within the organization, from a qualitative and process perspective. We base our argument on the idea that this capacity is developed as organizations work through the tensions between the ability to recognize new knowledge –that is an explorative characteristic - and the ability to use such knowledge for commercial uses –that is an exploitative characteristic. We argue that those two characteristics must be pursued simultaneously within the organization; that is, developing and using absorptive capacity requires ambidextrous characteristics. We document a case study (Alpha) where we single out a number of tradeoffs that illustrate the tension between the mechanistic and exploitative side of the organization (for short-term results) and the needs of the users to learn a new system that requires time during which characteristics and properties of the system are developed and refined.

Alpha, a worldwide organization with headquarters in Massachusetts has been implementing a Customer Relationship Management (CRM) system from 2001 to today. 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 –the "who, what, when and how" of this interaction (Gefen and Ridings, 2002). CRM systems integrate and synthesize a broad array of activities related to customer services, sales, and marketing (Mankoff, 2001). Combining these activities into a single seamless interaction gives organizations a strategic tool to potentially maintain and improve their customer relationships through customized integrated services. Like other ERP systems, CRM systems often involve prolonged and difficult phases of system design, development, and implementation.

In this paper we examine these "learning cycles" using a case study, which we analyze through the lens of absorptive capacity. We take from Cohen and Levinthal's (1990) original construct, the concept of "knowledge accumulation." From its further development we borrow concepts such as double loop learning (Dyer and Singh, 1998); relative absorptive capacity (Lane and Lubatkin, 1998); how learning cycles can be seen as a dynamic capability (Todorova and Durisin, 2007); and the importance of framing the learning process within a multilevel perspective (Cohen and Levinthal, 1990; Lane et al., 2006; Van de Bosch et al., 2005). Our idea of absorptive capacity is that it develops with learning cycles which are produced by the management of a number of tradeoffs. Those tradeoffs are managed with negotiation activities between the business managers –who generally want things done in the short term and with tangible outputs –and the natural process of organizational learning –which requires long term processes and which is generally intangible. The four themes which we identify represent double loop learning cycles which overlap chronologically; that is, while the organization is making a mistake exploring new knowledge at some point –e.g. making too much customization at the expense of the simplification of the system – the same organization is exploiting (already assimilated) new knowledge at some other point –e.g. considering ERP as a long term project which cannot be measured in terms of financial performance in the short term. In other words we agree with Zahra and George (2002) that absorptive capacity has two different phases: one is potential absorptive capacity –which is used to explore new knowledge and the other is realized absorptive capacity –which is used to exploit such knowledge. However we argue that absorptive capacity is not developed as a sequential process of building knowledge, rather we argue that absorptive capacity is a process built over cycles of learning that overlap.

Research Context and Methods

Our case study is based on Alpha, an international company with its headquarters in the United States, which sells product development technologies to manufacturing firms. In 2001Alpha decided to purchase a CRM system in order to improve the efficiency of its sales, marketing, distribution, and service functions.

Research context: the person who in 2001 was the Sales Department Manager, Alan, explained in an interview that the decision was based on the fact that Alpha needed an ERP system that would integrate all its branches worldwide to help the Sales Department's forecasting. At that time, in 2001, the whole company was experiencing problems over data management. Some employees were using spreadsheets such as MS Excel; a few were working in MS Word; a few had standalone, individual databases; and a small minority was able to use Oracle. This introduced

inconsistencies in the data being recorded and made it difficult to make realistic sales forecasts. And, as Nick explained, in 2001 sales forecasting was important to compete in an environment that was becoming more complex and dynamic. Nick was one of the people who was involved in the initial implementation of the CRM system. Finally, Clare, who was responsible for managing the project and currently manages the cross functional team that works on the ongoing implementation and maintenance of the CRM system, told us that in 2001 many high tech companies, and especially those with branches worldwide like Alpha, were adopting such systems. Alpha chose ULTRA-CRM as its CRM system because, according to Nick, in 2001 the Ultra-CRM was considered "THE [i.e., state-of-the-art] CRM system" and was the only one that could support different languages in a single database (it had Unicode support). In 2001 Alpha had no experience of an ERP system. This is an important detail since our perspective, which includes the absorptive capacity framework, implies that prior experience (and consequently knowledge) plays an important role in order to develop the ability to exploit such a system. Although we understand that prior knowledge is not a sufficient condition for the development of absorptive capacity, we are consistent with prior literature of organizational learning and we recognize that the extent to which a firm has accumulated knowledge in the past may affect future learning. Namely, prior knowledge represents a necessary but not sufficient condition to develop absorptive capacity.

Research method and methodology: we conduct a qualitative analysis and interpretative case study of Alpha in order to understand the implementation of its CRM system where our objective is to observe processes rather than to measure variables. Moreover, our epistemological position (interpretive) leads us to assume that reality, including the domain of organizational actors, is a social construction (Walsham, 1993). Our approach is consistent with the aim of our study which is to move beyond the traditional idea of scholars who have used absorptive capacity both to explain an objective reality (defining antecedents and drivers) and to predict the extent to which absorptive capacity contributes to organizational learning (measuring the outcomes),. We started the research project in August 2008 when we had the first interview with the CEO (Paul) and with the vice CIO who in 2001 was in the team that was managing the implementation of the CRM system (Nick). We understood that Alpha had experienced several issues in implementing ULTRA-CRM and we singled out that it would be meaningful to dig deeper into Alpha's problems in order to develop a longitudinal and retrospective analysis (from 2001 to today). Following Avison and Fitzgerald (1995) we believe that the ongoing process of implementing an ERP system lasts the whole life of the system itself and continues to evolve as the organization does. This is in keeping with the idea of growth and emergence of IT systems as opposed to design (Truex et al., 1999), where the implementation process is seen as constantly ongoing since organizations are constantly changing. Moreover, consistent with absorptive capacity we have assumed that developing both explorative and exploitative understanding of a CRM is a process which needs a long term perspective. In doing so, we investigate different steps in the accumulation of learning over time. We draw on data from several sources (observation, interviews, and document analysis).

Our research design has been developed as follows: firstly we obtained around eight hundred slides and various documents from the past steering committees (from 2001 to today). Then we started developing a narrative of the company to identify the key persons and the key events that have characterized the learning process that allowed Alpha to implement ULTRA-CRM. We made observations while attending both steering committees (cross department-strategic meetings) and working committees (operative meetings that focus on the implementation and integration of ULTRA-CRM). The interviews were addressed to both persons who are still working at Alpha and persons who have played important roles when key decisions were made (although not still at Alpha). All interviews were structured to allow the speaker to tell us a story (his/her version of what happened on a certain occasion, e.g. related to a particular decision). Specific questions were asked only when needed to write the full story of the implementation of the CRM system, for instance we asked about specific dates or who made a decision, how long an implementation phase took etc. Although we collected information from a number of sources of data, we don't want to triangulate different versions of the same story since, according to our interpretive perspective, we are consistent with Kreamer and King (1990) who state that the explanatory perspective of a positivistic approach –based on a rational-economic interpretation of organizational processes viewed as cause-effect relationships does not explain the "variance observed in the patterns and processes of adoption and routinization of information technology in various tasks, or the differences in successful use of the technology across organizations" (582-583).

We analyzed seven interviews and six observations. The length of the interviews was approximately 1.5 hours each. The length of the observations was from 1 to 1.5 hours each. We have recorded all interviews and working committees and we have placed all on mp3files. Moreover we have transcribed all interviews and working committees. In terms of coding the data we used NVivo 8.0 QSR for both transcriptions (interviews and direct observations) and the other materials (documents, slides etc).

Key Findings

Our data analysis identified that significant progress in relation to exploiting the functionality of their CRM came when Alpha reflected on decisions that had been made and realized that these decisions had not been very good decisions – i.e., they had made mistakes. The mistakes that were made were found to be related to the tradeoff discussed earlier between quickly getting the system to improve efficiency and the need to learn how to do things differently in the longer-term. We identified four themes that reflect this tradeoff and our analysis focuses on how early decisions were over-turned on the basis of subsequent experience. In exploring these tradeoffs, we use the lens of absorptive capacity to focus our analysis. This means that we look at characteristics such as prior knowledge and path dependency of future learning. In other words, our field work focuses on the whole story of the past of Alpha, in terms of prior experience and knowledge accumulation. In turn we try understanding how Alpha explores, accumulates, shares, and exploits knowledge, and whether –and to what extent –this is conditioned by the past. We understand that the explorative and exploitative phases of the learning process are often overlapping, and this result reinforces our interpretation of the development of absorptive capacity. Below in this section we will analyze four themes that represent the learning paths in Alpha as a result of its implementation of ULTRA-CRM.

Customization vs. Configuration of ULTRA-CRM

There are several strategic approaches to the implementation of ERP system software. The two main ones are either implementation of a standard package with minimum deviation from the standardized settings (the 'vanilla' system), or customization of a system, to suit the requirements of existing processes and activities (Holland and Light, 1999). According to Alshawi and colleagues (2004) organizations should seek to avoid customization because of the problems involved. For example, a highly customized system involves manual writing of code (programming) whenever a new release of the package is delivered by the vendor (Light, 1999). This is both expensive, because the company is required to pay programmers, and risky. It keeps the organization beholden to two suppliers: the software vendor and the programmers who maintain the system customization. However, despite these disadvantages of heavy customization it is common for organizations to customize certain parts of the software in order to adapt it to the unique context (Bingi, Shama, and Godla, 2001; Wenhong and Strong, 2004). Moreover, customizing software might represent a specific capability for a firm –namely, a company leverages its own technology that supports its own processes and activities. Finally, software customization is unique and hidden, and can represent a source of competitive advantage (Grant, 2002; Peteraf, 1993). Thus, the tradeoff between customization and configuration represents the first theme we are going to analyze.

During the first three years of implementation, Alpha's decision in relation to this trade-off was heavily weighted towards customization and they made very extensive modifications of the package. The main reason for customizing was that management wanted to exploit the new ERP in the short run and thought that significant customization made this easier more quickly. However, it was soon clear that the customization was not helpful because users found it too complicated – customizations had increased complexity rather than making it more suited to the needs of the company. Moreover, the management overlooked the users' needs and the result was a good system from a technical point of view but pointless from a practical one. As Nick, Vice CIO in Alpha told us in an early interview:

> *We implemented this highly customized thing that these guys [system designers] thought was fantastic, but nobody used it. […] Because it's so customized, nobody is using it. You built it as a management tool."*

Moreover the system was found to be too complicated because it had been customized originally to the Sales Department's needs and employees from other departments could not use it because it didn't fit their needs. So, it took two years for management to realize that their method of implementation of ULTRA-CRM – high customization – was not working for Alpha. In 2004, the business side and the IT side took the decision to dispense with most of the customizations and go back to the vanilla version. Although this was not, as Alan said, 'the best system in the world', it allowed data input by all users (company employees) in every department in the company, worldwide. As documented in some slides from a steering committee, when Alpha re-introduced a Vanilla version of ULTRA-CRM the perception of the system had changed in the company; a few expected goals are listed below:

> *Improved customer registration and account data maintenance processes with:*
> *   -streamline creation/usage/updates of new customer and partners*
> *   -new processes and controls utilizing vanilla will minimize bad data*

-sets foundation for order management process
Improved processes between the direct sales organization and order organization
-simplification of technology drives business functions: less errors, expedited order processing,
Accurate data for forecasting
-order validation procedures in ULTRA-CRM will encourage OA [Organization Activities] and
Sales Reps to communicate often and openly to reflect problematic orders
[source: slides "PRM SCOPE &ALIGNMENT MEETING]

The above slide highlights that the re-introduction of a vanilla version of ULTRA-CRM was perceived to better meet the needs of different departments in terms of communication and collaboration capabilities and encouraged employees to use the system; that is, back to vanilla had meant simplifying the whole ERP. Thus, we understand that Alpha needed almost 2 years to recognize that the system was not working because of the high customization. In 2001 they started customizing; and went live with this in 2002; in 2004 they went back to the vanilla version. The analysis of further interviews and documents suggested that the customization stage may have been a necessary step for Alpha, which showed management that a balance was required between changing the system and changing organizational processes. As John –a project manager from the ULTRA-CRM implementation team –indicates: "this is our process and we must have it this way and only in hindsight we would say we could have customized less". Our absorptive capacity lens allows us to argue, in line with Cohen and Levinthal (1990), that the firm's capability to understand its needs in terms of how to manage processes, develops cumulatively. Alan, the Sales Manager, and Nick, the vice CIO, told us that they had learned lessons. At the time they were unable to predict the effect of customization (against using the vanilla software), despite the fact that their consultants were advising against this. However, they had learned the downsides involved in this decision and both now believe that they would be able to manage the tradeoff better in the future.

Business-Oriented vs. User-Oriented Implementation

The tradeoff between customization and configuration is linked to the tradeoff or balance between user-oriented and business-oriented implementation, which is the second theme we are going to analyze. Introducing a system that is accepted by users is seen in the literature as critical to the success of ERP implementation (Holland and Light, 1999; Markus et al., 2000; Nah, Lau, and Kuang 2001; Parr, Shanks, and Drake, 1999; Rosario, 2000; Sumner, 1999). The "user perspective" includes support for users and managers and technical staff acceding, as much as possible, to user requests in their configuration and customization of a CRM system. In contrast to the broad organizational level issues, users can have a significant input into the implementation of these systems through requests and queries submitted to the implementation team. Being responsive to user requests and configuring new systems to support users' business processes and work procedures is particularly important where senior management do not have hands on involvement in actual work procedures, as is the case with CRM, which involves several stakeholders with sometimes conflicting views and priorities (Kilker and Gay, 1998; Petersen, 1998). Moreover, user acceptance is absolutely critical to the success of software projects, and user participation can help to achieve this (Davis and Olsen, 1985; Mumford and Weir, 1979; Mumford, 1983).

On the other hand, implementing an ERP system to satisfy business requirements and improve efficiency is the priority for managers, who want the system to go live as quickly as possible. Involving users may lead to more effective implementation across the organization but also involves huge amounts of what some management consider being "wasted time". This was confirmed by Alan, the Sales Department Manager. He had originally felt that it would be a waste of valuable time to expend effort on promoting a new ERP, running user acceptance tests (UAT), and involving users in pre-implementation and implementation processes. Moreover, in large organizations with multiple different departments there are often political reasons why the implementation of an ERP may be perceived differently across organizational units (Umble et al., 2003) so that involving users from different departments may lead to a stale-mate (Aladwani, 2002; Scott & Wagner, 2003). As shown above, Alpha managed the initial pre-implementation and implementation phases of ULTRA-CRM without the involvement of all departments in the firm. Nick described how management's attempt to implement (and customize) the system for all departments was not successful:

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.

Implementation of the CRM system started in the Sales Department because the thinking at that time was that the Sales people were the ones that "made the money," and therefore were most in need of an ERP system. Although some attempt was made to promote the new system in the Sales Department (e.g. the Sales managers provided information on the advantages of the new system) the sales staff were not involved in technical specifics, such as the type of interface that was required, the functionalities it would bring to facilitate the transfer of spreadsheet data to the CRM system, or the advantages of learning to use a new, different and more complicated system. Staff were told only that the new system would enable more effective forecasting - but were told nothing more. In 2001 Nick was aware of management's objective in implementing ULTRA-CRM; he said 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.*

While senior management may be able to dictate that a particular functionality be implemented, this does not necessarily translate into company wide use, and there are many ways that users can resist a new system, or at least its use as intended (Bordreau and Robey, 2005) as was demonstrated at Alpha after the initial implementation – nobody really used the system because it had been designed to support managers' needs but without a clear consideration of how users actually worked. For instance, a document analysis of two groups of slides from 2001 and 2002 steering committees reveals that while the plan was clear in terms of

> *-building up marketing processes by October 2002,*
> *-automating quote-to-order by October 2002, 3)*
> *-completing the baseline rollout by December 2002*
> *-integrating the forecasting system by January 2003*
> *[source: slides Exec Dec for 6-8-01; Alpha ULTRA-CRM Roadmap]*

there were not intermediate steps with scheduled UAT tests, there were no internal marketing campaigns to promote the new system and –as revealed by other interviews –there was not even the perception that the system might create problems in terms of user acceptance. But after experience, the business owners recognized that overlooking the internal needs –namely paying scarce attention to campaigns to promote the introduction of a new ERP - are important. This was confirmed by Alan who explained us as follows:

> *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, and there is a whole bunch of technical stuff that happens in the background. So, I think if I were to do it again, I would require really good methodology, and communication around marketing[…]*

By 2007 and 2008, Alpha, based on what it had learned, now spends a considerable amount of time running UAT across all departments when it is introducing new functionality or upgrading the system. For example, in 2009 Alpha has introduced UAT and system tests for the Value Added Resellers (VARs) module that it is currently developing to upgrade the functionality of the CRM to allow its external partners to use the system. The lessons learned are being applied along the whole supply chain. Alpha's management has accepted that it is fundamental to involve all stakeholders. In an interview in November 2008, Claire explained that Alpha's management is focusing on Partnership Relationship Management (PRM):

> *a lot of what we are doing around the PRM initiative, we are at the end of development and system testing and heading into user acceptance testing next month, but this time last year it was a lot of pie in the sky requirements and trying to understand how those would map out.*

Initially, Alpha's managers believed that the users would be constrained by a new system built by management. However, they have found that this approach does not work. Alpha has had to learn how to balance the conflicting interests of achieving user acceptance and introducing a new system quickly. According to Dougherty (1992) the development of cross-functional understanding that allows all departments to communicate and collaborate is very important. Communication and collaboration will be difficult since in different organizational units (and functions) there will be people with different backgrounds and thus different views. The co-existence and accommodation of disparate views is particularly important in ERP system implementations which promote major organizational change and the institutionalization of a dominant perspective across the organization as a result of the software's integrated design (Wagner and Newell, 2004). Learning how to accommodate these different needs occurred gradually in Alpha to the point where the current development (VARs) is working with multiple user groups,

including external partners, to negotiate a working system. This lesson was learned over six years, from 2001 to 2007. The trade-off described here illustrates how many organizations, when implementing an ES, attempt to impose a single (typically managerial) vision and silence those who may dissent from this vision by not including them in decision-making, because of the need to measure the efficiency of technology with tangible outcomes.. Moreover, the tendency to customize ULTRA-CRM (theme 1) influenced the system that was rolled out from the Sales department across the other departments. However, the inevitable existence of heterogeneous perspectives in an organization implies that forcing a common standard may not be helpful (Wagner and Newell, 2004). For Alpha the need to negotiate over the longer term was learnt when they found that nobody was using the system. They have subsequently learned that accommodation and compromise is necessary.

Short vs. Long Term Performance Management Focus

Within this (third) theme we highlight the different perspectives –short or long term –of organizations implementing ERP systems. Many organizations focus initially on short term financial returns from ERP system implementation. Alpha was no different, being convinced that a CRM system would bring short term tangible (financial) benefits so that management focused on ROI. It took three years for Alpha management to recognize that focusing on ROI was not helpful to move from a go-live phase of ULTRA-CRM to a more exploitative phase of the system. The timeline of this lesson learned overlaps the lessons learned about the tradeoff between configuring and customizing the system (theme 1). In fact, as illustrated by Nick with some slides in the first meeting with Alpha (where he presented the story of the company) both market data and X-Cons said that in 2001-2002, 2/3 of ROI in high-tech firms was explained by capabilities developed with CRM systems. Unfortunately the analysis that was made by Alpha overlooked the time needed to develop such capabilities, and that was the big mistake. Over two years after beginning implementation of the package, management was forced to acknowledge that a good post-implementation process [of ULTRA-CRM] was more important than ROI. As Nick explained:

> 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."

This lesson is consistent with the information systems literature which highlights the importance of considering an ERP system as an intangible asset that brings benefits in the long term (Hitt, Wu, and Zhou, 2002; Nicolau, 2004). Although the literature shows that ERP systems are associated with high levels of project failure (Robbins-Gioia, 2001) and 20% of information technology projects are shut down prior to installation (Cooke et al., 2001), 80% are implemented. This suggests that we should change our focus from short-term problems and opportunities from the implementation of an ERP system to understanding how organizations learn to exploit the functionality of these systems over the long term. Alpha's management came to understand what was important in its ULTRA-CRM implementation. It can be difficult to convince senior management and board members of the importance of investing in an ERP system when the financial benefits will only accrue in the long term. Alpha had to undergo a process of organizational learning in terms of the time required. It could be argued that a focus on ROI in the short term was necessary for Alpha to consider embarking on the CRM system project. After several years, some slides, in contrast with the "ROI perspective", highlight that Alpha has learned to consider a longer term conception of the implementation phase, such as:

> -emphasizing the importance of training courses for all employees over time;
> -highlighting the need to build up long term scenarios for compatibility tests between ULTRA-CRM and some existing local databases;
> -documenting the creation of training documents, divided by position and business process;
> -scheduling long term plans of employees training in Asia and Europe, and with regard to future upgrades of the system

> [source: slide CUSTOMER REGISTRATION: STEERING COMMITTEE]

Thus, the empirical findings show that the company experienced errors and lessons from its focus on the short-term and came to appreciate the importance of the longer-term intangible benefits from their investment in ERP.

Organizational Insularity vs. Openness

When Alpha in 2001 decided to use ULTRA-CRM, management chose to spend a considerable amount of money hiring a consultancy company –Xcons –in order to be helped in the assessment and implementation process. We use

this (fourth) theme to investigate the capability of Alpha to absorb new external knowledge from a consultancy company. We focus on this story since we have observed that Alpha had difficulties in recognizing the value of the new external knowledge of Xcons. What we see is that Alpha in 2001 had not yet developed an organizational capability to both recognize and exploit new external knowledge related to CRM.

When Alpha decided to hire a consultancy company Xcons was one of the most expensive but Alpha decided to go with the best one since it was the first time that Alpha was implementing an ERP. Xcons and Alpha worked together for more than a year: there were two teams, one from Xcons and one from Alpha. The aim was to work on the existing processes of Alpha and implement (both customizing and configuring) the new CRM. Alpha's team mirrored Xcons team and the aim of the mirroring was to transfer knowledge from Xcons to Alpha. Claire, who in 2001 was working for Xcons, explained this:

> *Yeah it [the Xcons team] was mirrored; they were joined at the hip working very closely together. We had a configuration lead and the team helped design and develop that and the three resources I mentioned from Alpha helped develop that too, our config lead oversaw all of their work … I was on the data side with conversions and the integration points and so I actually got to teach Nick those parts so he learned how to do the data points and helped out with the conversions and integration eventually assumed responsibility for all that, so a lot of it was kind of …coming on board, helping with the development / we were responsible for a lot of knowledge transfer and that was pretty routine for Xcons folks that as you know were coming towards the end of a project how you would transition that knowledge off to the customers resources.*

In trying to understand how the knowledge transfer worked we interviewed both Xcons and Alpha employees and from the data analysis it emerged that the most important suggestion that Xcons gave to Alpha –to do very few customizations –wasn't followed by Alpha management. In fact, Alpha started the implementation of the CRM with a lot of customization (see our theme 1).

Moreover, another interview with Bill, the Marketing owner, shows that it was not just hard to acquire knowledge from X-Cons but it was difficult to identify what exactly Alpha was doing with the consultant company, in terms of results achieved.

> *I think there was a lesson learned using X-Cons. We thought that when X-Cons left - I think they were here for 9 months, something like that - we were under the impression that we were kind of done with the implementation at that point. And as it turns out, we weren't even close. I would say 3 or 4 years later and we were still chipping away at deficiencies in the product. We had narrowed the scope down so tightly with X-Cons -- It was like we have to be able to run one e-mail campaign in North America in English. We made it so easy, the bar was so low that we were all high-fiving each other at the end of the X-Cons project. They leave and all of a sudden, you turn around and start using it in a real way in the company and you realize, well, hold on, it doesn't do double-byte characters, and it doesn't do this and it doesn't do this and it doesn't integrate with the web. So I think we completely missed the requirements definition. Setting how to setup requirements that were truly reflective of the way that we wanted to run the system, that was another huge lesson learned.*

In a way, Alpha in 2002 was not absorbing knowledge but just some good practices. Alpha was following a recipe from an external source without understanding how to replicate such a recipe (e.g. the dynamic capability to reconfigure an asset for a change) and so was not developing a (internal) dynamic capability.

Moreover, in 2003 Alpha hired for one month a second consultant company (Ycons). The aim was to evaluate their progress with ULTRA-CRM from an external point of view. Ycons noticed the lack of marketing activities within the organization –no campaign to promote the new ERP –and they pushed Alpha to try running a campaign to facilitate the introduction and acceptance of ULTRA-CRM from an end-user perspective. We found those details in some slides from Ycons where the consultant company tried to promote such marketing activities –e.g. giving a "smart" name to the CRM, and prodding Alpha to understand the necessity of promoting the new system not only in terms of high performance and high tech functionality but also in terms of sharing with the employees the feeling that "the system is a good one" and everybody will benefit from its introduction. For sure Alpha didn't follow all recommendations from Xcons for political reasons, but at the same time we argue that the capability of an organization to acquire new knowledge is a capability that must be developed over time. The fact that Alpha didn't

also follow Ycons' recommendations is again evidence of this insular behavior. We can't assess how much it took for Alpha to learn this lesson since after Ycons they never hired other consultant companies. What we know is that they now (2008 –interview with Nick) recognize the importance of following the consultants' suggestions.

Many scholars that have written on absorptive capacity have studied the process of absorbing new knowledge from another organization (Dyer and Singh, 1998; Lane and Lubatkin, 1998; Lane, Salk, and Lyles, 2001; Mowery et al., 1996). Particularly, Lane and colleagues (2001) proposed and tested a model that points out the importance of trust between two firms as a determinant component for a firm to be able to absorb new external knowledge. Although their study focuses on firms in a competitive environment we argue that most of the problems of Alpha in accepting Xcons and Ycons suggestions might depend on trust and on the level of experience or prior knowledge. Although we don't want to integrate the model from Lane et al (2001) into our theoretical perspective we recognize that trust (or, lack of trust) played an important role in explaining the knowledge stickiness between Alpha and its consultant companies. Thus, the problems that Alpha experienced in the process of knowledge acquisition point out that is important for an organization to have the capability to develop trust to absorb knowledge rather than simply having knowledge 'only' available. In fact, the process of knowledge transfer is a complex one and the 'materialization' of new knowledge is, thus, neither immediate nor taken-for-granted. On the contrary, new knowledge is built through learning processes that, as we have presented, are double loop cycles that are often prompted by reflections that evaluate past decisions as mistakes.

Discussion

In this section we try to integrate the results of our observations with the existing literature, and use some of the absorptive capacity insights to highlight that the construct can be used with qualitative and interpretive studies. Moreover, we want to draw attention to new potential ideas and avenues of research that can use the absorptive capacity construct in a non-positivistic way.

In our perspective we see organizational learning as a process and we assume that such a process is composed of learning cycles. We discuss the importance of prior (accumulated) knowledge (Cohen and Levinthal, 1990) and we develop the concept of path dependence (Garud and Karnoe, 2001) that results in learning lessons and so building absorptive capacity from decisions that turn out to have been mistakes. Our analysis underlines that it is fundamental to consider ERP implementation as a long-term learning process where benefits will be emergent as users learn to appropriate the ERP as part of their ongoing daily work practices in ways that help them to do their jobs better. Our concepts reflect insights from absorptive capacity, not just drawing theory from the original construct (Cohen and Levinthal, 1990) but also from the subsequent reconceptualizations (e.g. Dyer and Singh, 1998; Lane, Kola, and Pathak, 2006; Lane and Lubatkin, 1998; Zahra and George, 2002). Thus, the aim of this study is twofold: on the one hand we report what we understood of Alpha in terms of the firm's effort to implement an ERP –that is, they made mistakes and they learned lessons. Consequently we conceptualize such learning processes and identify some themes that have represented major issues in ERP implementation –and this conceptualization represents also a contribution of this study for practitioners. On the other hand, we show that what we found while observing and interviewing persons from Alpha is mostly consistent with what was found by scholars who used a different (positivistic) approach. Nevertheless, we identify some issues that were captured uniquely with our interpretive lens. In particular, we pay more attention to how things happen rather than what is the outcome of such things. Moreover, we treat organizational actors as individual and autonomous sources of knowledge and unpredictable behaviors rather than –holistically –a black box which produces a certain outcome (e.g. innovation).

In terms of integrating our study with previous studies, we think that the multilevel perspective highlighted by Cohen and Levinthal (1990) is crucial for understanding how absorptive capacity develops. However, while their paper points to the importance of path dependency and prior knowledge, they treat the past as an antecedent and a condition to learn. By contrast, we look at how the learning process can integrate what firms accumulate over time. Then, following Dyer and Singh (1998), we found that behaviors and interactions can help build up double-loop absorptive capacity. Moreover, we use the idea of Zahra and George (2002) to see absorptive capacity as both potential and realized. However, although they reconceptualize the construct focusing on the process –they say that absorptive capacity is dynamic –we think that their argument falls short when they abstract the learning process reducing it to a sequence of exploration and exploitation activities, giving their theory a very deterministic stamp. Lane and Lubatkin (1998) were useful for us to justify the extent to which trust affects learning but they restrict their study in the R&D unit and try to measure an intangible outcome – knowledge - which plays the role of the independent variable. Thus, they don't answer the question *how such learning happens*. Lane, Kola, and Parhak

(2006) highlight some important omissions in the prior literature of absorptive capacity and learning in general, but their theoretical study so far has had no field research follow up. Moreover, while they consider the double loop process between knowledge outputs and the explorative vs. exploitative learning, they incorporate those elements in their model treating them as antecedents, overlooking the interaction between these so-called "drivers" and the behaviors of the individuals involved.

In terms of discussing the contribution from our field work, we develop our insights around three key issues that characterize our study: the interaction between *learning and prior knowledge*, the importance of focusing on the *long instead of the short term*, and the necessity of overlapping cycles of *explorative and exploitative learning*.

Prior Knowledge: the importance of prior knowledge is highlighted in our case study. For instance the management at Alpha came to understand that there is no best way to decide whether and how much to customize (theme 1); they moderated the "business view" and stopped overlooking the user acceptance issue (theme 2); they moved from a short term approach to a long term approach (theme 3); and they recognized that they had to "learn how to learn" from Xcons and Ycons (theme 4). Highlighting the role of prior knowledge, we are consistent with prior literature and we notice that in our case study absorptive capacity results from a prolonged process of investment and knowledge accumulation (Tsai, 2001) and it is path dependent (Mowery and Oxely, 1996). Scholars that have considered the accumulation of knowledge under the umbrella of absorptive capacity have for instance stressed the accumulation of experience and the development of a firm specific knowledge (Vinding, 2006). Both processes can be found in Alpha. The accumulation of experience occurs gradually (e.g. we have collected data from slides and documentation that show the step by step process of making a decision, finding a problem, re-negotiating a decision). An interesting point that has emerged from our interviews is that apparently the development of this experience that builds capabilities is mainly concerned with tacit knowledge, built with learning by doing processes (Nonaka, 1994; Reber, 1996).

Our observations also showed that part of the organizational learning was accumulated, in terms of knowledge absorption, unconsciously or without direct interaction and rationalization of the learned lessons. One illustration of the tacit and unconscious learning comes from answers to our "learning questions". Our observations revealed that sometimes the managers were unaware of the learning process that led them to a specific decision. For example, while in interviews we were told that they have moved from a short-term focus on ROI to a longer-term focus on more intangible benefits, it was not clear that there was a moment in time when the evaluation of the ROI emphasis was consciously reflected on and seen as mistaken. Rather, the capacity to emphasize the intangible benefits from their CRM accumulated gradually, more like a virus than an epiphany. We argue that the extent to which knowledge is assimilated consciously is hard to capture with quantitative tools; focusing on the qualitative side of the learning process has given us this important insight.

Building knowledge over time and being conditioned by lessons learned suggest that future actions are influenced by past learning. We thus argue that path dependence can help us understand how the learning process has been developed at Alpha. Scholars have argued that path dependence emerges when temporally remote events play a key role in the development of novelty and that these events gain significance post hoc (Garud and Karnoe, 2001:2). Absorptive capacity, from this perspective, is a capability that develops keeping in account the past. Present and future choices –as we have observed in the decision making process at Alpha –are conditioned by choices that were made in the past. Learning, from this perspective, is an elaboration and extension in specific directions depending on the particular sequence of unfolding events (David, 1985; Arthur, 1988). Stated differently, our case study indicates that the development of absorptive capacity might be considered a path dependent phenomenon. While absorptive capacity has path dependency in terms of an input-output analysis (Todorova and Durisin, 2007; Van de Bosch, Volberda, and De Boer, 1999), previous research has focused on drivers such as the accumulation of knowledge and on (performance-related) results. Our observations of the learning process across the four themes show that history and past experience emerge –consciously and unconsciously –across the organization. This idea leads us to identify two main key concepts of the learning process in Alpha: firstly, past knowledge is acquired by a slow and not fully managed process and the learning process involves persons (such as managers and team leaders) as well as institutions (for instance new cross functional teams formed to manage the intra-unit implementation of ULTRA-CRM); secondly, apparently the learning cycles are undefined and it is almost impossible to predict the extent to which persons and organizations are able to learn.

Organizational Learning as a Long Term Process: considering the importance of prior knowledge we asses that the ability to recognize new external knowledge (absorptive capacity) is a capability that is developed over time. Following Cohen and Levinthal (1990) the simple notion that prior knowledge underlies absorptive capacity has

important implications for the development of absorptive capacity. Accumulating absorptive capacity in one period permits more efficient accumulation in the next period. In the Alpha case study we can see the importance of the time perspective in order to develop such capability and to use it to manage the tradeoffs we have analyzed. Our argument is consistent with prior literature, e.g. Lane et al. (2006) highlight that absorptive capacity is developed over years and is critical to a firm's long term success. Moreover, if we focus on the study of Zahra and George (2002) we recognize that the learning process needs time. They posit that absorptive capacity has two main (longitudinal) phases. The potential absorptive capacity is the capability to acquire and assimilate new external knowledge and the realized absorptive capacity is the capability to transform and exploit such knowledge. As George and Zahra argue, absorptive capacity must be seen as a continuous process that builds organizational knowledge from new (external) knowledge, especially by the development of social integration mechanisms that facilitate the sharing and the eventual exploration of knowledge (2002:194).

Moreover, we are consistent with the reconceptualization from Todorova and Durisin (2007) who introduce power relationships. The concept of power relationships interact with cognitive processes, learning and capabilities in an organization (Cohen et al., 1997; Contu and Willmott, 2003; Dosi et al., 2003). Powerful actors within and outside the organization influence the learning process; power relationships have been defined as those relationships that involve the use of power by actors to obtain certain results (Pfeiffer, 1981). All the four tradeoffs that we have analyzed underline how important is negotiating, why some (wrong) decisions were made and how long it took to moderate the effects of power relationships in order to learn how to manage those social interactions more effectively. The focus on a long term perspective to assess what are the possible issues that affect learning over time encourages us to follow up with further field work in order to find out other factors that may contribute to the development of absorptive capacity. In this case we argue that participant observations, should give us more evidence of how power and politics impact on strategic decision making processes.

Ambidexterity Learning: the need for flexibility to explore, (ex)change, and exploit new knowledge practices faces the stickiness of organizational knowledge itself (Szulanski, 2003). In line with the work of Newell et al. (2003) we found that exploiting ERP and exploring new knowledge practices are two complementary activities rather than contradictory. However, while their study focused on four organizational mechanisms from Adler et al. (1999), which help organizations pursuing efficiency and flexibility, our study focuses on organizational cognition activities which help an organization to build absorptive capacity that gives flexibility (Cohen and Levinthal, 1990; Zahra and George, 2002) and that needs efficiency, in order to exploit the new accumulated knowledge. While Jansen et al (2005) found that some organizational mechanisms (coordination capabilities, system capabilities, and socialization capabilities) can influence both potential and realized absorptive capacity our explorative study shows that the capability to absorb new knowledge originates from mistakes and learned lessons. Although our subjectivist perspective does not see absorptive capacity in terms of a linear and deterministic relation between its (virtual) antecedents and its (possible) outcome (that is, innovation) we have found that the knowledge sharing mechanisms found by Jansen et al. might facilitate the dissemination of new knowledge, especially if tacit, and so sticky (Szulanski, 2003).

In terms of balancing exploration and exploitation of new knowledge we found that at the beginning of the implementation of ULTRA-CRM the company needed to explore rather than exploit, since Alpha was experiencing for the first time the implementation of an ERP. At the same time the managers were focusing on the exploitation of the ERP. The result was that during the first stage of the implementation mistakes were made which have been documented - the go-live phase of the CRM (2001-2002) was described as a failure by internal documents. After about two years, however, past mistakes became learned lessons. At this stage phases of exploring new knowledge (e.g. returning to the Vanilla version of ULTRA-CRM) overlaps with exploiting new knowledge (e.g. using the Vanilla solution not only in the Sales Department –as a pilot –but across multiple organizational units, in order to achieve data integration, useful to make market forecasts). For sure, it was important for Alpha not to give up (which was about to happen in 2004, as documented in the slides we analyzed). At that stage a cultural component (the clear idea of an objective: what the organization wants to achieve) was influential. Thus, another lesson learned for Alpha, which is also a hint for project managers, is that the incubation phase of a learning process (when mistakes have been made but learning cycles have not started yet) is hard but necessary in order to start developing learning behaviors. So, what we have found is that in order to develop ambidextrous behavior to absorb new knowledge 1) organizations need to realize their mistakes, 2) organizations must develop a culture of "resistance" to failures in the first phase of the learning process, and 3) while organizational mechanisms can reinforce such learning processes, the start comes from organizational behaviors, culture, managerial capabilities and from the capacity to use prior acquired knowledge to develop exploration and exploitation cycles, which naturally overlap.

This last theme is so far underdeveloped from a field work perspective and we argue that scholars should concentrate on some of the characteristics of ambidextrous learning in order to deeply understand how organizations manage the tradeoff –apparently necessary –between exploring new external knowledge and exploiting existing knowledge. Moreover, we see that those two processes must overlap to be effective in terms of the achievement of absorptive capacity over time. This thought is also consistent with the recent study of O'Reilly and Tushman (2007) where they explicitly assess that the behavioral component is an important key concept to resolve the exploration vs. exploitation dilemma.

Conclusions

This paper contributes to the knowledge of ERP implementations presenting a case study where we have observed a number of themes that represent learning cycles that occurred over nine years. This longitudinal and retrospective study uses the lens of absorptive capacity to understand how Alpha has learned from its mistakes (knowledge accumulation). The literature contribution of this research is represented by a qualitative study that uses the absorptive capacity framework (that historically has been used with quantitative analysis) to look at the dynamic process of developing the capability to exploit a new ERP. We have developed the concepts of prior knowledge that should be necessary –but not sufficient –in order to recognize and exploit new knowledge (Zahra and George, 2002).

A possible development of our study is to identify some emerging practices, mechanisms, and structures (i.e. when actors enact structures) during the development of the ambidextrous learning at Alpha. This implies a focus on end users instead of just looking at the management side. It would be interesting as well to find out what are the ambidextrous characteristics –which we have studied in the learning process –that can be extended to other organizational processes or activities.

As we will continue to develop our study both theoretically and empirically, we have some suggestions for scholars in terms of potential studies that might develop new theory and test our assumptions. For instance, further studies could focus more deeply on how the qualitative method can cover the research gaps in the quantitative literature on absorptive capacity that very often has been studied only in relation to specific innovation units and operationalized with patents. We argue that studying the absorptive process (of new knowledge) and the knowledge transformation process with a case study can help to extend what we already know from the existing absorptive capacity literature, such as the fundamental importance of trial and error learning, and the impossibility of identifying a best practice where there are tradeoffs to manage.

Then, we would like to encourage further research that focuses on the multilevel perspective of absorptive capacity. As we have seen in our case study, both the individual and the firm level of analysis were important in order to enable us to understand how an organization can learn to exploit an ERP like ULTRA-CRM. We might argue that ambidextrous behaviors are different e.g. at the team level and at the organizational level. We would consider absorptive capacity also at the individual level even though we are not sure that it is possible to study ambidexterity at such a level. Finally, we suggest that focusing on the team level (especially cross functional teams) would represent a meaningful literature contribution on both the theoretical and the empirical perspectives of our study since 1) past literature on absorptive capacity has been almost silent on the team level, 2) ERP implementations teams play an influential role in rolling out packages, developing software, implementing step-by-step modules in different organizational units, and talking to both the technical and business people.

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