

IMPLEMENTING CRM: LEARNING CYCLES UNDER THE LENS OF ABSORPTIVE CAPACITY

KEYWORDS: ORGANIZATIONAL LEARNING; ABSORPTIVE CAPACITY; KNOWLEDGE MANAGEMENT; ERP IMPLEMENTATION.

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Abstract –*In this paper we focus on the iterative process that occurs within the implementation phase 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 development is a process of continuous evolution with no final design being possible or warranted. Moreover, we argue that 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. We examine these “learning cycles” 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 and absorptive capacity; relative absorptive capacity, that is what a firm can learn in terms of new knowledge acquired through consultancy; how learning cycles can be seen as a dynamic capability, and the importance of framing the learning process within a multilevel perspective. Our case study is based on Alpha Co., an international company with its headquarters in the United States, which sells product development technologies to manufacturing firms. The contribution of this research study 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.*

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Introduction

According to Markus, Tanis, and Fenema (2000) Enterprise Resource Planning (ERP) systems are based on developing a common IT infrastructure and common business processes that will support the integration of an entire business activity. 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

Practically, ERP systems are packaged software that has been developed and licensed out to clients. ERP systems typically have built-in standardized functionalities that allow organizations to integrate disparate data (Davenport, 2000; Cortada, 1998). Examples of popular application packages and their developers are SAP, Oracle, PeopleSoft, and JD Edwards (Jacobs and Weston Jr., 2007).

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). 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 problems that can arise in the implementation (for the first time) of an ERP system in a large organization.

Much of the research advocates 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 part of the organizational effort to diffuse ERP innovation throughout a user community. Markus et al. (2000) introduce a process view of ERP implementation, which includes a maintenance phase that captures the “onward and upwards” efforts of users as they learn to exploit the ERP system to support their work once the package is implemented. Our definition of the implementation phase is consistent with Markus et al. (2000) as is our adoption of a process perspective of the implementation phase, that is, as an iterative rather than a linear process (Elbanna, 2006). In highlighting some of the problems that can arise during this process, we use a case study (Alpha Co.) approach and focus on a particular ERP system, that is, Customer Relationship Management (CRM). 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 (Davids, 1999). Like other ERP systems, CRM systems often involve prolonged and difficult phases of system design, development, and implementation.

In this paper we focus on the iterative process that occurs within the implementation phase which we depict as a series of learning cycles: managers make decisions, identify mistakes, and accumulate experience (lessons learned). We argue that ERP development is a process of continuous evolution with no final design being possible or warranted. Moreover, we argue that 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. We examine these “learning cycles” 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 and absorptive capacity (Dyer and Singh, 1998); relative absorptive capacity, that is what a firm can learn in terms of new knowledge acquired through consultancy (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, Koka, and Pathak, 2006; Quigley et al., 2007; Van de Bosch, Wijk, and Volberda, 2005)

Below we identify a number of themes that represent the learning paths in Alpha Co. as a result of its implementation of CRM software, which began in 2001 and is still ongoing at the time of writing (2009). These themes are:

1. *customization vs. configuration*: this theme includes the process that allows management to understand the extent of customization required and the extent to which it is possible to work with the vanilla characteristics of the CRM package where modification is confined to what can be done using the configuration tools;
2. *user acceptance vs. the business process that management wants*: we look at the importance of user commitment and highlight the problems experienced by Alpha Co. in involving all users, in all departments. We highlight areas where political problems can occur; noting how organizations with multiple departments and objectives are particularly vulnerable;
3. *short vs. long term performance management focus*: we look at the extent to which Alpha Co. focused on the short term (financial) indicators, such as return on investment (ROI), rather than long term organizational

performance – often represented by intangible assets - and how this focus changed over time;

4. *organizational insularity vs. capability to accumulate knowledge through inter-organizational learning*: in 2001 Alpha Co. hired a consultancy company (Xcons) to assist management during the ERP system implementation phase but failed to adhere to its recommendations and suggestions. We argue that it is not always straightforward for a firm to follow the lead of an external company even if it has been hired for its advice and has huge experience; rather an organization has to learn to trust the advice of an external party.

In this manuscript we aim to develop these four themes and investigate the learning process involved in the accumulation of new knowledge in organizations. We focus on persons and organizational structures, arguing that both affect individual and collective learning. We also argue that in order to understand the learning process (cycles) it is fundamental to study structures and behaviors jointly (Edmondson, 1999; Bogenrieder and Noteboom, 2004). This is consistent with the latest studies on absorptive capacity, which, on the one hand agree about the importance of focusing on the learning process and on the other hand highlight the importance of considering this construct from a multilevel perspective (Dyer and Singh, 1998; Lane, Kola, and Pathak, 2006; Lane and Lubatkin, 1998; Todorova and Durisin, 2007; Van de Bosch et al., 1999; Zahra and George, 2002).

Our research question is: how do organizations learn to exploit the benefit from an ERP system over time and what is the role of absorptive capacity in this process. More specifically, we focus on the challenges and trade-offs that are experienced as an organization struggles to adapt to and adapt an ERP system to support improved efficiency and effectiveness.

The paper is structured as follows: in Section two we introduce the case study of Alpha Co., presenting the story of the company from 2001 to present. Then we describe the methodology used. In Section three we discuss the themes that we have singled out in the introduction, that includes four potential learning cycles. In Section four we provide a discussion of the case study and we integrate our results with the existing literature. In Section five we highlight the limitations of our study and we offer some suggestions for further research based on our conclusions.

Research Context and Methods

Our case study is based on Alpha Co., an international company with its headquarters in the United States, which sells product development technologies to manufacturing firms. In 2001, for a number of reasons, Alpha Co. decided to

purchase a CRM system in order to improve the efficiency of its sales, marketing, distribution, and service functions.

Research Context

The Sales Department Manager, Alan, explained in an interview that the decision (which was Alan's responsibility) was based on the fact that Alpha Co. needed an ERP system that would integrate all its branches worldwide to help the Sales Department's forecasting. At that time, in 2001, the Sales Department was the key department in the company, and 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, a Project Manager in Alpha Co. 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 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 Co., were adopting such systems.

Alpha Co. 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 Co. had no experience of an ERP system. This is an important detail since our perspective, which includes the absorptive capacity framework, assumes that prior experience (and consequently knowledge) is fundamental for the ability to exploit such a system. However, in our case, Alpha Co. was embarking on its first experience of the implementation process and, as we will demonstrate, went on to experience an iterative learning process of knowledge accumulation.

Research Method

We conduct a qualitative analysis and explorative case study of Alpha Co. in order to understand the implementation of its CRM system where it is important to observe processes rather than to measure variables (Yin, 2003; Scapens, 1990, 2004). We draw data from several sources (observations, interviews, document analysis) to allow multiple levels of analysis of the dynamics in a single setting (Eisenhardt, 1989).

Longitudinal perspective – we started the research project in August 2008 when we had the first interview with the CEO (Paul) and a Project Manager who in 2001 was in the team that was managing the implementation of the ERP system (Nick). We understood that Alpha Co. 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 analysis (from 2001 to today) on the implementation phase of their CRM. 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, Baskerville and Klein, 1999), where the implementation process is seen as constantly ongoing since organizations are constantly changing. As such, ERP development needs to be seen as a continuous process of evolution with no final design ever being possible.

Data collection – our research design has been developed as follows: in the first phase we obtained a number of slides and documentation from the past *steering committees* (from 2001 to today). All the slides have been discussed with Nick and Claire. Claire is the person who is now leading the team that works on the cross unit implementation of ULTRA-CRM. The slides were useful 1) in order to figure out what has happened from official sources (most of the slides came from presentations with the CEO, CIO, CFO) and 2) to know the names of the people that were involved (and are still involved) in the implementation of ULTRA-CRM. This last point was helpful for us to address our future interviews.

In the second phase of the research project we started developing a narrative of Alpha Co. trying to identify the key persons and the key events that have characterized the learning process that allows Alpha Co. to implement ULTRA-CRM. We followed up with interviews and observations. The interviews were addressed to both persons that are still working at Alpha Co. (e.g. persons from the team that works on the cross unit implementation of the system) and to persons that are not still working at Alpha Co. but who have played an important role when e.g. the decision to implement a CRM system was made. We made observations while attending both *steering committee* and *working committee meetings*. Whereas *steering committees* are monthly and the participants are the responsible persons from all departments (e.g. for Sales, Marketing, HR, etc...) the *working committees* are weekly and the participants are persons that are working on the cross functional implementation and integration of ULTRA-CRM. The *steering committees* are more strategic while the *working committees* are more operative.

All interviews were managed trying to let the speaker tell us a *story* (his/her version of what happened on a certain occasion, e.g. when he or she was involved in a 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 (to put events in the right position in the longitudinal analysis), or

who made a decision, how long an implementation phase took, why there was/wasn't an involvement of certain employees of certain departments etc.

We have recorded and transcribed all interviews and working committees. Unfortunately we still have not been able to record any of the steering committees because of privacy issues. We have written notes of the meetings though.

Key Findings

The findings of our case study describe what we have collected in terms of interviews and observation based on the four themes that we have presented in the introduction section. The themes represent tradeoffs and we highlight *how* Alpha Co. tried managing them over years. We see them under the lens of absorptive capacity.

Theoretical Lens

The field work has been developed according to an inductive theory building approach. We aim to explore the processes and mechanisms of both institutions and persons as members of the organizational context of analysis (Giddens, 1984). In detail, we examine: a) organizational structures (e.g., unit position in the organization, composition of teams, cross function and cross unit projects) and mechanisms (e.g., level of centralization, formalization) that could influence the learning process; and b) social phenomena such as the outcomes of people's actions based on their subjective interpretation of the world, and within the limits imposed by the software (Jones, 1999). We investigate the cognitive and behavioral dimensions of all the factors that influence the learning process in order to understand how past behaviors and structures constrain and influence current behaviors. This longitudinal analysis allows us to study the implementation process as a dynamic capability development, which we assume contributes to competitive advantage (Leonard Burton, 1992; Teece, Pisano, and Shuen, 1997). Our case study focuses on the subsequent learning processes, that is, on what Alpha Co. learned from mistakes/failures and to what extent these have been exploited to refine its decision making. In exploring how such processes work, we try seeing it under the lens of absorptive capacity. It 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 Co, in terms of prior experience and knowledge accumulation. In turn we try understanding *how* Alpha Co. accumulates, shares, and exploits knowledge, and whether this is conditioned by path dependence. Consequently we aim to understand and describe the extent to which the past – in terms of prior experiences (and knowledge accumulation) may influence the future – in terms of the capability to apply new external knowledge).

Below in this section we will analyze four themes that represent the learning paths in Alpha Co. 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, or customization of a system, to suit the requirements of existing processes and activities (Holland and Light, 1999).

According to Alshawi, Themistocleous, and Almadani (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 achieve its hidden and *unique* capabilities (Bingi, Shama, and Godla, 2001; Wenhong and Strong, 2004).

During the first three years of implementation, Alpha Co.'s decision in relation to this trade-off (between customization to suit the organization and upgradability) was heavily weighted towards customization and they made very extensive modifications of the package purchased. However, it was soon clear that the customization was not being exploited because users found it too complicated – customizations had increased complexity rather than making it more suited to the needs of the company. As Paul, Vice Chief Information Officer in Alpha Co. 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. But [it was argued] don't give up yet. Hang in there."

The system was found to be too complicated because it had been customized originally to the Sales Department's needs and "*nobody [from any other departments] could use it because it was too complicated*". The interfaces did not have the fields required by other departments and many users continued to use their spreadsheets with the obvious result that data were not consistent and there were multiple versions of data.

Alpha Co.'s main objective after two years of implementation, to have one system for the whole organization that would enable accurate forecasting, was far from being realized. As Clare said:

They [the users] were not going to use it which made it difficult to obtain reporting about and to get insights into what was going on at the different customers.

So, it took two years for management to realize that their method of implementation of ULTRA-CRM – high customization – was not working for Alpha Co. In 2004, the decision was taken to dispense with most of the customization 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.

The above suggests that the customization stage may have been a necessary step for Alpha Co., 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 view 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, one of the company's General Managers, told us that they had learned lessons. The effect of customization (against using the original software) was unpredictable. However, they had learned the delicacy involved in this decision and both now believe that they would be able to manage the tradeoff better in the future. Moreover, absorptive capacity has thus been exploited by new members of Alpha Co. For instance, John (who has only been working at Alpha Co. for a couple of years) told us that *'some parts of the package have to be customized while some others do not'*.

User Acceptance vs. the Business Process That Managers Want

The tradeoff between customization and configuration is linked to the tradeoff or balance between user-oriented implementation and business-oriented implementation. Introducing a system that is accepted by users is seen in the literature as critical to the success of ES implementation (Holland and Light, 1999; Markus et al., 2000; Nah et al., 2001; Nah et al., 2003; Parr et al., 1999; Rosario, 2000; Sumner, 2000). The "user perspective" includes support for users and managers and technical staff acceding, as much as possible, to user requests in their configuration and implementation 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 (Petersen, 1998) which involves several stakeholders with sometimes conflicting views and priorities (Kilker and Gay, 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).

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 to be "wasted time". This was confirmed by Alan, the Sales Department Manager in Alpha Co. Management often feels that it is 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, Haft, and Umble, 2003) so that involving users from different departments may lead to a stale-mate. The integration of an ERP system needs to be coupled with business integration, to produce business processes that are stream-lined across functions and departments although standardization of work practices across functional business areas is often difficult and often meets with resistance from stakeholder groups (Aladwani, 2002; Scott & Wagner, 2003).

Alpha Co. managed the 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 Co. 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.

In 2007 and 2008, Alpha Co., based on what it had learned, spent a considerable amount of time running UAT across all departments, and finally in 2009 is experiencing positive results from its implementation of a CRM system. In 2009 Alpha Co. 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 Co.'s management has accepted that it is fundamental to involve all stakeholders. In an interview in November 2008, Claire explained that Alpha Co.'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.

We would argue that there is a tradeoff between step by step implementation involving users and 'big bang' implementation. Alpha Co.'s managers believed that the users (employees) could be constrained by a new system built by management but found it was impossible to make the system run effectively. In terms of the external users (such as the VARs), it is even more important to involve them. Alpha Co. has had to learn how to balance the conflicting interests of achieving user acceptance and introducing a new system without getting buy-in from all the various stakeholders. According to Dougherty (1992) the development of cross-functional understanding that allows all departments to communicate and collaborate over a common aim 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 (Dougherty, 1992). The co-existence and accommodation of disparate views is particularly important in ERP system implementation which promotes 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 Co. to the point where the current development (VARs) is working with multiple user groups, including external partners, to negotiate a working system.

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. However, the inevitable existence of heterogeneous perspectives in an organization implies some skepticism about the ability to organize through such common aims (Wagner and Newell, 2004). Fuller (1978) argues that it is important to consider the demands and requirements of all parties and negotiate. For Alpha Co. the negotiation phase, that is, the extension of the customization to all departments with the aim of progressive commitment from users, provided this lesson when it was found that nobody was using the system. They have subsequently learned that accommodation and compromise is necessary.

ROI and Short Term Benefits vs. Long Term Benefits

Within this 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 Co. was no different, being convinced that a CRM system would bring short term tangible (financial) benefits so that management focused on ROI. More than 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; Hitt, 2002; Nicolau, 2004). Moreover, the literature shows that ERP systems are associated with high levels of project failure (Robbins-Gioia, 2001). However, while 20% of information

technology projects are shut down prior to installation (Cooke, Gelman, & Peterson 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 potentially powerful systems over the long term. Alpha Co.'s management came to understand what was important in 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 Co. 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 Co. to consider embarking on the CRM system project. However, the company experienced errors and lessons from the series of learning cycles that were involved in its implementation, which created (accumulated) new knowledge at the individual (e.g. Nick) and organizational (e.g. Frank, who absorbed the knowledge from the organization) levels.

Organizational Capability to Recognize New External Knowledge by a Consultant Company

When Alpha Co. 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 theme to investigate the capability of Alpha Co. to absorb new external knowledge by 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 Co. 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, a person that 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 Co. 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, it wasn't very new to me but ...

In trying to understand how the knowledge transfer worked we interviewed both Xcons and Alpha Co. 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 –as we have explained before (see bullet point one in this section) Alpha started the implementation of the CRM with a lot of customization.

For sure Alpha didn't follow all recommendations from Xcons for political reasons –as we have argued before in this section –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.

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, Oxley, and Silverman 1996). Particularly, Lane, Salk, and Lyles (2001) proposed and tested a model that points out the importance of trust between two firms in order 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 suggestions might depend on the level of trust. Again, this issue might be connected to the scarcity of experience of Alpha in managing a long term consultancy that, moreover, might have been sponsored by the management in order to make easier the absorption of knowledge by the whole firm.

The difficulties that Alpha Co. experienced in the process of knowledge acquisition point out that is important for an organization to have the capability to absorb knowledge rather than simply having knowledge 'only' available. In fact, the process of knowledge transfer is as 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.

Discussion

In this section we try to integrate the results of our observations with the existing literature, and borrow some of the absorptive capacity insights to build new theory. In our perspective we see individual and organizational learning as a process and we assume that such process is composed of learning cycles, consistent with Dyer and Singh (1998) who assess that behaviors and interactions build double-loop absorptive capacity. 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, in a multilevel perspective. Then we underline 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.

Prior knowledge

The importance of prior knowledge is highlighted in our case study when we describe the lessons learned. 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 above); they moderated the “business view” and stopped overlooking the users acceptance issue (theme 2). Moreover, 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 (theme 4). Concluding with Cohen and Levinthal, “*prior knowledge permits the assimilation and exploitation of new knowledge. Some portion of that prior knowledge should be very closely related to the new knowledge to facilitate assimilation [...] Accumulating absorptive capacity in one period will permit its more efficient accumulation in the next. By having already developed some absorptive capacity in a particular area, a firm may more readily accumulate what additional knowledge it needs in the subsequent periods in order to exploit any critical external knowledge that may become available*” (1990: 135-136).

Highlighting the role of prior knowledge, we evidence that 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 arguments can be found in our case study.

The accumulation of experience should be considered part of the explicit knowledge of an organization (e.g. we have collected data from slides and documentation that assess the step by step process of making decision, finding a problem, re-negotiating a decision). The development of specific knowledge – such as a core capability (Leonard Burton, 1992) –is mainly considered as tacit

knowledge, built with learning by doing processes (Nonaka, 1994; Reber, 1996). In fact, the observations we made evidence 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 symptom of the tacit and unconscious learning is when we find answers to our “learning questions”, more observing verbal responses than spoken answers to questions. We argue that sometimes the managers are unaware of the learning process that led them to a specific decision

Building knowledge over time and being *conditioned* by lessons learned suggest that future actions might be influenced by past learning. We thus argue that path dependence can help us understanding how the learning process has been developed at Alpha Co. 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, in 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 Co. –are conditioned by choices that were made. 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, the development of absorptive capacity is a path dependent phenomenon.

While absorptive capacity has path dependency in terms of an input-output analysis, paying attention to drivers such as the accumulation of knowledge and to (performance-related) results such as the number of patents per year in an R&D division, we build our theory overlooking the antecedents and the outcomes of absorptive capacity and we concentrate on the process (what happens and how this happens) within the organization. Our observations in all the themes that we have analyzed show that history and past experience emerge –consciously and unconsciously –across the organization. This has two main consequences: 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 are formed to manage the intra-unit implementation of ULTRA-CRM). Secondly, our results highlight that the learning cycles are undefined and it is almost impossible to predict the extent to which persons and organizations are able to learn with an *a priori* analysis.

In other words we assume that organizations might not seek good practices to explore and exploit ERPs whereas the capability to implement a new system is based on a learning process that is dependent on those involved recognizing that there is not one ‘best’ way to do something and that others will have alternative views of what is best. In doing this, organizations have to face a number of tradeoffs –we have analyzed four of them, so far –that require decision making as well as the capability to use previous experience.

Organizational Learning as a Long Term Process

Considering the importance of prior knowledge we assess that the ability to recognize new external knowledge (absorptive capacity) is a capability that is developed over the long term. Following Cohen and Levinthal (1990) the simple notion that prior knowledge underlies absorptive capacity has important implications for the development of absorptive capacity over time. Accumulating absorptive capacity in one period permits more efficient accumulation in the next period. In Alpha Co. 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, Koka and Pathak (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 *facilitates the sharing and the eventual exploration of knowledge* (2002:194). To reinforce our arguments we integrate the model of Zahra and George 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, Levinthal, and Marengo, 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 properly.

At the end of the day we conclude that the learning cycles must be developed over years, and that we can study the learning process using absorptive capacity, basing our assumption on the consistency of prior knowledge with future behaviors (path dependence). Thus, developing and maintaining absorptive capacity is critical to a firm's long term survival and success because absorptive capacity can reinforce, complement, or refocus the firm's knowledge base.

Conclusions

This paper contributes to the knowledge of ERP implementations presenting a case study (Alpha Co.) where we have observed a number of themes that

represent learning cycles that occurred over nine years. This longitudinal study uses the lens of absorptive capacity to understand how Alpha has learned from its mistakes (knowledge accumulation). The literature contribution of this research study 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 (George and Zahra, 2002). We started building some theory on the concept of both prior knowledge and path dependency, according to the framework of absorptive capacity.

As we will keep going on developing our study both theoretically and empirically, we have some suggestions for scholars in terms potential studies that might develop new theory and test our assumptions.

For instance, further studies should 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 R&D 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.

Moreover, we would like to encourage further research that focuses on the multilevel perspective on absorptive capacity. As we have seen in our case study, both the individual and the firm level of analysis were determinant in order to enable us to understand how an organization can learn to exploit an ERP like ULTRA-CRM.

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 and 2) ERP implementations teams play a determinant 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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