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Organizational Learning and ERP Post-implementation Phase: A Situated Learning Perspective

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Abstract:

In this paper, we interpret the sequence of events and issues that led to the ERP failure during the post-implementation phase in a large IT service management company in Australia. For this purpose, we used theoretical frameworks from the domain of organizational and situated learning. We found that several factors created severe complexities and failure at the post-implementation phase of the ERP: 1) staff's lack of understanding of the SAP-ERP, 2) the interconnection of ERP with business processes, 3) a disconnection between the training that the vendor provided and actual work practices, and 4) management's and staff's misunderstanding about the adequacy of the training and staff engagement. Our findings suggest that the theoretical space that situated learning theories provide can enhance our understanding about post-implementation issues.

Keywords: ERP Post-implementation, Situated Learning, Organizational Learning, Case Study.

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1 Introduction

The ability to implement and quickly appropriate IT represents one of the key organizational capabilities of the upcoming second machine age (Brynjolfsson & McAfee, 2014). However, many organizations still struggle with effectively using IT, which one can see in the high rates of failure among enterprise systems (ES) implementation projects despite the fact that such systems have existed for over three decades. To justify such failure, researchers and organizations have often pointed to the complexity of the systems themselves and the settings in which organizations implement them.

To respond to the above challenge, many researchers have tested several theoretical frameworks to explain learning effectiveness of stakeholders in various phases of the enterprise resource planning (ERP) lifecycle (Al-Mashari & Al-Mudimigh, 2003; Antero & Riis, 2011; Capaldo & Rippa, 2009; Lee, Park, & Lee, 2015; Newell, Tansley, & Huang, 2004). However, most existing studies mainly focus on successful ERP implementations, and few investigate the post-implementation phase.

As for the post-implementation phase, researchers have already demonstrated the importance of a systematic approach to ongoing training and support (Calvert & Seddon, 2006), localized IT and peer support, and ongoing training as key factor in encouraging ERP users to attain long-term productivity and satisfaction (Mendoza, Carroll, & Stern, 2008). Hsu, Yen, and Chung (2015) recently investigated the complexities surrounding the post-implementation phase of ERP and found that current conceptualizations of relevant complexities do not fully problematize the interdependence of tasks and systems. Therefore, the studies that adopt such conceptualizations propose relative complexity as a conceptual extension to fully problematize such interdependence. The studies' results suggest that relative complexity is an important concept for understanding the efforts required to achieve effective ERP use (Chou, Lin, Lu, Chang, & Chou, 2014).

Researchers have made remarkable progress in illuminating different mechanisms to comprehend the complexities and dynamics of ERP system implementation and use. Organizational learning represents one such mechanism that can help in to advance our understanding of ERP systems implementation and use. Such understanding, in turn, will lead to achieving anticipated benefits. Organizational learning is imperative given the significance of the interactions among people during ERP systems implementation. As a general rule, organizational learning can potentially reduce complexity and uncertainty in the process (Tomblin, 2010).

For the current study, we extend existing studies by adopting an organizational approach for managing and controlling complexities during ERP users' learning process. Specifically, we adopt the situated learning theory, which promotes informal learning mechanisms. We use this theoretical perspective to explain the learning process of the ERP users based on their "identity" and "practice" (see Section 2.2). We adopt an informal learning theory mainly because organizations often report the ineffectiveness of formal training as a primary reasons for their failure to achieve anticipated benefits (Al-Mashari & Al-Mudimigh, 2003; Davis & Comeau, 2004; Grossman & Walsh, 2004; Hsu, Yen, & Chung, 2015; Nicolaou, 2004; Tsai & Wang, 2008). In this study, we analyze the learning process of ERP users through an informal learning theory as a pre-cursor for enhancing these users' learning effectiveness during the post-implementation phase. After all, the adopters of (new) information technologies in general and ERP in particular often prefer to learn from their colleagues rather than through formal learning methods due to the trust they have in their colleagues' knowledge about organizational practices (Robey, Boudreau, & Rose, 2000). Other researchers have also found support for this belief: they have found the that success or failure of an ERP implementation rarely concerns an ERP system's features but rather the task or the processes of re-engineering that typically accompany such systems (Davenport, 2000; Morris & Venkatesh, 2010; Peppard & Ward, 2005).

Contribution:

This study makes two main theoretical contributions: 1) it identifies learning issues that arise in the post-implementation phase of ERP systems via adopting situated learning theory and 2) it develops a higher-order understanding of the above learning in a real-world organizational context. Practitioners involved in ERP implementation projects can use our findings to enhance the effectiveness of ERP users' training and learning processes.

Furthermore, most studies on workplace practices indicate that the way people actually work usually differs fundamentally from the way organizations describe that work in manuals, training programs, organizational charts, and job descriptions. ERP users work with ERP developers and specialists and also meet throughout the day for coffee or meals when they typically tell trade stories back and forth. Nevertheless, organizations tend to rely on formal training methods for improving work practices. By relating the above arguments to the ERP implementation and post-implementation studies, one may argue that the way people actually work with/through the ERP system differs from what the ERP developers and associated user manuals prescribe. Thus, we need to explicate such a discrepancy.

In this paper, we focus on better understanding the relationship that exists between organizational learning and ERP systems implementation in real-life organizational contexts. As such, we address the following two research questions (RQ):

RQ1: What kinds of learning issues emerge during ERP post-implementation stage?

RQ2: How does learning develop during the ERP post-implementation stage?

We investigated the above research questions through a longitudinal interpretive case study of an ERP system (SAP) implementation in a large IT consultant company in Australia (Bravo) using the situated learning theory as a mechanism for organizational learning.

This paper proceeds as follows: in Section 2, we review the literature on organizational and situated learning theory and studies on ERP success. In Section 3, we present the research methodology. In Section 4, we analyze our results and, in Section 5, discuss them. In Section 6, we conclude the paper.

2 Literature Review

In this review, we synthesize a theoretical framework to understand issues related to ERP's post-implementation phase. To this end, we organize the review under three related areas: "organizational learning (OL) and ERP success", "situated learning theory (SLT)", and "ERP post-implementation phase" (the latter represents the context for applying SLT). In Section 2.1, we provide the historical background on the application of OL in various ERP phases. In Section 2.2, we introduce various theoretical SLT concepts to better understand the complexities involved in ERP post-implementation phase. In Section 2.3, we develop a synthesized theoretical framework to collect and analyze empirical data.

2.1 Organizational Learning and ERP Success

Researchers have already identified a large number of factors as causing many ERP projects to fail. These studies recognize the critical role of the relationship between organizational learning and an ERP system when an organization implements such a system (Robey, Ross, & Boudreau, 2002; Shehab, Sharp, Supramaniam & Spedding, 2004). Several studies have highlighted learning challenges in an ERP environment (Boudreaue, 2003; Mendoza et al., 2008; Robey et al., 2000). For example, Tomblin (2010) observed that an organization's inability to learn can cause it to fail to implement an ERP system. Researchers have noted that we need more in-depth qualitative studies to understand the learning phenomenon during ERP systems implementations (Esteves & Bohorquez, 2007; Poston & Grabski, 2001; Tsai & Hung, 2008).

Chang and Chou (2011) note a lack of literature on how organizations engage in learning and how organizations transform learning when appropriating ERP systems. More recent reviews (Grabski, Leech & Schmidt, 2011; Moon, 2007) indicate that a majority of ERP systems research focus on ERP system success factors and economic effects and seldom on the learning involved in implementation process. They suggest that studies should focus on what an organization needs to move from poor implementation to more successful implementation. However, to the best of our knowledge, no existing studies have investigated such a phenomenon in detail. Accordingly, the lack of empirical findings inspired and initiated the current research.

Researchers have traditionally classified the theoretical perspectives of organizational learning into the following three overlapping categories with multiple common elements and assumptions among them: 1) organizational adaptation perspective, 2) collective learning perspective, and 3) learning as business.

Organizational adaptation perspective: a large number of studies take the organization as a unit of analysis. They examine how this entity learns to change and adapt (Edmondson, Kramer, & Cook, 2004;

Naot, Lipshitz, & Popper, 2004) either as a result of entity-level cognitive learning capacities (Friedman & Antal, 2005) or changes in organizational systems, structures, routines, and processes (Pentland & Feldman, 2005; Shrivastava, 1983). We adopt this perspective in this study.

Collective learning perspective: other researchers conceive OL as a result of collective individual practices. They examine how individuals learn in organization (Edmondson et al., 2004; Naot et al., 2004). Under this approach, one can see organizational learning at its simplest form: as the sum of what individuals learn in organizations or the aggregation of what key members such as senior managers learn (Esteves & Bohorquez, 2007; Nonaka, Byosiene, Borucki, & Konno, 1994).

Learning as business: this approach deals how higher education training courses transfer work-related knowledge, skills, abilities, and attitudes to the workplace (Collinson, 2000). Such learning may occur in the following forms:

- 1) Experiential learning through recognizing prior experiences as a component of a university-level work-based learning course
- 2) Service that benefits a large number of people as opposed to service that focuses more narrowly on maximizing returns to shareholders, and
- 3) Work-integrated learning that combines learning outcomes and content with learning methodologies that allow individuals to apply and demonstrate that learning to achieve workplace outcomes (Shipley, 2015).

We believe that we can explain the relationship between ERP systems implementation success and organizational learning with the theoretical frameworks under the organizational adaptation approach. Adopters of information technology (IT) prefer to learn from their colleagues rather than through formal learning methods due to the trust they have in their colleagues' knowledge of organizational practices (Robey et al., 2000). Other researchers also support this belief in suggesting that the success or failure of an ERP implementation rarely concerns an ERP system's features but rather the job or processes of re-engineering that typically accompany such systems (Davenport, 2000; Morris & Venkatesh, 2010; Peppard & Ward, 2005).

Among various organizational learning theories based on the organizational adaptation approach mentioned above, informal learning mechanisms such as situated learning provide benefits to organizations that they cannot attain through other means, which is particularly true for the case of ERP systems given that researchers have often reported that ineffective formal training represents a main reason for why organizations fail to achieve anticipated benefits (Al-Mashari & Al-Mudimigh, 2003; Davis & Comeau, 2004; Grossman & Walsh, 2004; Hsu, Sylvestre, & Sayed, 2006; Nicolaou, 2004; Tsai & Wang, 2008; Venugopal & Rao, 2011). Chang and Chou (2011) explain that implementing an ERP system encourages all relevant units in an organization to work together to accomplish the required objective. ERP systems enhance communication and help integrate business processes because they support users in working together. Such collaborative work ultimately affects the system's operations. In addition, ERP systems strengthen relationships among the users more than legacy systems do. Therefore, learning emerges as users interact in the context of established routines and procedures (Chang & Chou, 2011; Newell et al., 2004).

Some researchers such as Grabski et al. (2011) have pointed out the urgent need for qualitative insight into how organizational learning emerges when organizations implement ERP systems and how that learning affects the implementation. However, few studies have done so; thus, we examine the issue in this paper. We explain situated learning theory in more detail in Section 2.2.

2.2 Situated Learning Theory

Under the organizational adaptation perspective, situated learning theory (SLT) has emerged as a radical alternative to the conventional cognitivist theories of knowledge and learning. IS researchers have used SLT when emphasizing the relational and structural aspects of learning and the dynamics of identity construction (Handley, Clark, Fincham & Sturdy, 2007). For example, Handley et al. (2007) investigated how management consultants learn the practices and identities appropriate to client-consultant projects. Results from another study on virtual teams revealed that workers devise local practices for coordinating their work with team members, which implies that the learners' identity in relation to their work is situated in their local practices rather than imposed on them by outsiders, such as managers or collaborative

technologies (Robey, Khoo, & Powers, 2000). In the above examples, researchers used situated learning theory to explain the relational and structural aspects of learning and the dynamics of identity construction.

SLT focuses on several core constructs—participation, identity, and practice—and the dynamic relationship among them. According to Handley et al. (2007), “identity and practice develop through participation”. In other words, “as people participate in sociocultural activities and practices, they contribute to the development of community practices that simultaneously contribute to the individuals’ own development and identity” (Lave & Wenger, 1991; Matusov & Rogoff, 1995). Individuals define the social context based on how they participate in social practice and involves interactions other than face-to-face ones. This aspect also characterizes many of today’s networks of ERP social contexts.

In other words, SLT position individuals in terms of their social circumstances (or their specific local practices), whereas cognitive theories (rivals to SLT) position individuals in terms of their physical location with no regard for their situation in the actual work environment (Brown & Duguid, 1991) as their organizing metaphor. Figure 1 below shows this difference.

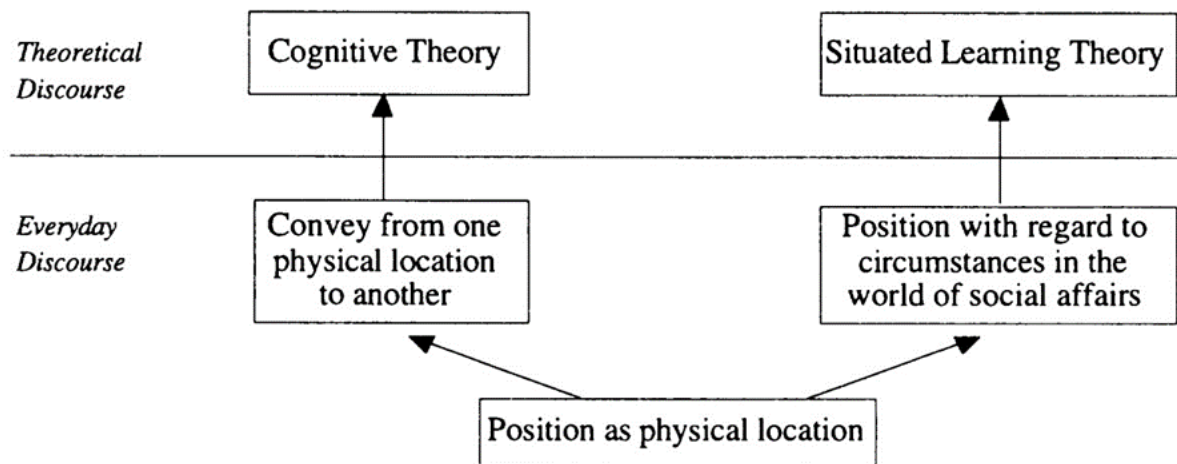


Figure 1. Metaphorical Underpinnings of Cognitive Theory and Situated Learning Theory (Adapted from Cobb & Bowers, 1999)

According to SLT, learning and working are integrated activities that mutually enable each other (Capaldo & Rippa, 2009). According to Lave and Wenger (1991, p. 31) “learning is an integral and inseparable aspect of social practice”. Brown and Duguid (1991) further demonstrate that groups will better understand a newly introduced system if they work together and develop an informal (local) practice of learning; that is, “learning by doing”. The members of these groups socially construct their world based on the context in which they work; in doing so, they bind themselves together via context and create the social fabric of the organization in an emergent manner.

2.3 ERP Post-implementation Phase as a Context for Situated Learning

The post-implementation phase of ERP development (also called the post go-live stage) involves running and maintaining the ERP systems on a daily basis (Capaldo & Rippa, 2009). This stage comprises various processes that are critical to a system’s success and the anticipated benefits (Hsu et al., 2006; Nicolaou, 2004). In this stage in the ERP systems lifecycle, the systems become available to staff members for regular use to accomplish routine activities (Motiwalla & Thompson, 2011).

One can consider prevailing ERP implementation research as factor research as it mainly focuses on identifying critical success factors (CSF) for implementing ERP (Aladwani, 2001). Factor research has value in certain contexts but suffers in that it has a rather static view that cannot explain the dynamics of the implementation process. Unlike most existing ERP studies, we adopt a process-oriented approach to understand what kind of learning issues emerge during the ERP post-implementation stage and how these issues impact how workers learn during ERP post-implementation stage.

Companies have often encountered great difficulties in using, maintaining, or enhancing ERP systems after implementing them. These challenges may turn into costly investment and can lead to a business disaster (Capaldo & Rippa, 2009; Hsu et al., 2015; Pan, Baptista Nunes, & Chao Peng, 2011). However,

the extant literature on ERP applications tends to focus on issues related to the adoption and implementation; it pays little attention to the post-implementation stage (Hsu et al., 2015). Post-implementation studies have focused on investigating factors that influence an organization's capacity to use an ERP system effectively in the years after it goes live (Calvert & Seddon, 2006; Ruivo, Oliveira & Neto, 2014). These studies have found that ERP users' knowledge and skills degrade in the absence of a systematic approach to ongoing training and support. These studies also imply that localized IT and peer-support and ongoing training represent key factors that encourage ERP users to persist. In turn, this persistence will result in long-term productivity and user satisfaction (Mendoza et al., 2008).

Other researchers have also used SLT to understand and explicate the local learning process in a bank during and after it implemented a CRM system (Yamauchi & Swanson, 2010). Several groups in the bank used the ERP—each for a particular localized work specific to their own group only. The study's findings suggest that, in assimilating the system, each group of users created familiarity pockets situated/embedded in their routine (or, local community) works. These familiarity packets were specific to each group and irrelevant to the works of other groups in the bank.

3 Research Methodology

Due to the exploratory nature of situated learning in SAP implementation, we adopt an interpretive case study as our principal research approach. In an interpretive case study, one investigates a phenomenon in its natural setting through interviews, direct observation, analyses of documentation and archive records, and an examination of physical artefacts (Benbasat, Goldstein, & Mead, 1987). It allows one to focus on the "sticky, practice-based problems where experiences of actors are important and the context of actions is critical" (Benbasat et al., 1987, p. 369). We had one main criterion for the case organization we selected: it had to have successfully implemented SAP and actors who contributed towards this success. As a result, we selected Bravo Australia—a large IT company in Australia—for the study. For the transformation of its business processes, the company's IT strategy defines innovative use of ERP for the implementation of the above strategic objective. We found that the organization's top management claimed to have successfully implemented SAP in the scheduled time. However, the inside story from middle management and operational users differed. Such differing views provided the rationale to investigate the SAP project in detail by exploring related issues and strategies associated with it.

We collected data after the system went live through various methods. The primary data collection method comprised interviews and observation. We also collected various secondary data from Bravo's documents and the consulting firm responsible for change-management activities such as communication, training, and post-implementation support. We had previously worked with some of the project team members; as such, we could obtain some background information about the SAP project in Bravo Australia.

We investigated various aspects of SLT's participation, practice, and identity concepts when both collecting and analyzing data. More specifically, we focused on finding out how workers' identity and practice developed through participation (Handley et al., 2007)—that is, how the company and its members engaged with the SAP and interpreted it in their own practices. We followed up their stories regarding their experiences with the system and the ways they engaged with it and used it throughout the implementation phases. By deeply analyzing the interaction of the workers with the ERP and among themselves, we could better understand how they learned as individuals and groups and how the company as a whole learned. Following the principle of abstraction and generalization that Klein and Myers (1999) explicate, from our interpretations, we created a processual model of SAP implementation and organizational learning in the case company.

When analyzing the empirical data, we applied the principle of multiple interpretations (Klein & Myers, 1999) by looking into both the particular environment in which the interviews took place and the broader organizational contexts at the time of the events that the interviewees talked about. We also consulted documents to better understand the contexts and processes at different phases of the project.

The case study comprised retrospective data collection (i.e., data from 2008 to 2009) and longitudinal work from 2011 to 2014. Given our prior interaction with some of the project team members in the organization provided, we understood the company and its processes well and gained access to some valuable contacts in the company. The unit of analysis was organizational learning, and, as a result, we conducted semi-structured interviews in Bravo with the staff from various managerial levels through to the employees at clerical level and the external project consultants. In all, we conducted both one-to-one interviews and interviews with focus groups (38 in total) and transcribed them (800 pages in total). Bravo's

senior management, who had their assistants organize meetings and interviews with different staff members throughout the organization, supported our data-collection efforts. We also collected other important documents such as a detailed project scoping analysis, training documents, problem logs, performance indicators, press releases, and vendor stories about the implementation. In order to interview only those interviewees who played a significant role in the ERP implementation, we used the judgment and snowball methodology used (Marshall, 1996). By using judgment sampling, we could adopt a non-probability sampling technique that suited our research objectives. This sample method ensured that we selected the interviewees who could best answer the interview questions. In addition, we used the snowballing technique; that is, we asked our subjects to suggest other appropriate people we could interview. In Section 4, we analyze the results we obtained from the first phase in which we collected data.

4 Analysis of Results

To ensure Bravo smoothly transitioned from its old to its new system, it performed a comprehensive change-management (CM) strategy and associated training using a generic simplified version of SAP for training. However, after the organization configured SAP configuration, the organization realized that the training was inadequate, created a lack of identity among the staff, and generated little participation in the actual socio-technical context (see Sections 4.1 and 4.2 for details). Consequently, staff failed to link the training with their work environment, which led to the absence of a social context for learning (see Section 4.4) that, in turn, resulted in various misunderstandings, complexities, and, eventually, failure (see Section 4.5).

4.1 Un-identity

The inappropriateness of workers' existing knowledge and skills for the new circumstances formed the main obstacle that workers initially faced in adopting the SAP in Bravo. The new system imposed specific business processes embedded in SAP on the organization, which led to considerable organizational changes (e.g., role and responsibility changes, changes in cross-functional interconnectivity, and new knowledge requirements). Due to these changes, staff had to complete the same old tasks using unusual steps that required different types of skills and knowledge than their existing ones.

Initially, the staff struggled to understand SAP and its requirements for accomplishing their tasks that they performed comfortably under the old system. As one interviewee said:

I used to use the old system very well too and I knew it back to front or as well as I could learn it. I could do it with my eyes closed after a while. Then all of a sudden you are faced with a new system, not only you have to learn how that system works, but also the processes. (Business service officer 1)

According to SLT, individuals' participation in sociocultural activities contributes to developing community practices that simultaneously contribute to their own development and identity. However, in Bravo, a lack of staff contributions—itsself due to a lack of effective socio-cultural activities among staff—meant that staff formed no such identity. In other words, the consultants' ERP training program did not seem to address the requirements for staff to develop an identity.

After going live with SAP, staff in the accounts payable and requisition department began to feel helpless and that their jobs lacked meaning and responsibilities, which created a sense of un-identity among them. The specific reason for such identity crisis emerged from the unexpected addition of IT-related tasks in their routine workload. For example, a business service officer had to suddenly raise purchase orders (PO), which she never done with the legacy system. Under the new system, staff had to become involved in much wider business processes and practices, but they did not have the proper context to do so. As a result, many individuals became frustrated. Indeed, one business service officer responsible for raising a PO noted:

I have been told to do certain things regarding POs which I've never done in my entire career. Even the fields in the SAP payment process/form were different from the other payments [in the legacy system]. The fields were asking us questions that we have never had to answer like what is the next date of your payment. It was frustrating. (Business service officer 2)

To complete the above task, one needed to understand both the new process and relevant IT procedures and practices. Staff were not familiar with their new responsibilities (lack of identity) and could not comprehend the imposed changes.

4.2 Lack of Participation

Further, the new knowledge requirements emerged because of cross-functional interconnectivity, which, in turn, resulted from the integration of all business processes. Therefore, staff had to understand not only the SAP module relevant to their particular business process but also other interconnected modules as well. As one interviewee said: “It is not the particular module which [one] is working on but [one] also needs to know the other modules which are interlinked with it and that’s annoying” (contract administrator).

This quote demonstrates that the cognitive learning approach that the external ERP consultants initially adopted, which was based on individual-level learning, did not incorporate the network of ERP social contexts and its dynamics. In other words, the organization inappropriately adopted a “cognitive approach” in organizational learning as opposed to the “situated learning” approach (see Figure 1 for a comparison). The cross-functional interconnectivity of SAP business processes imposed a particular “discipline”, which served as the main source of frustration, as the program manager noted:

Everyone needs to understand that SAP comes up with a “discipline”. SAP’s discipline means that if you don’t get it right upfront the rest of the transaction is stuffed right away through to the general ledger journal and fixing it through doing a general ledger journal or through someone in AP manipulating it is not going to work as everything is interlinked now.

However, this discipline did not come with staff’s adopting an appropriate organizational learning paradigm. While the new work had links to various other departments in the organization, staff received little explicit guidance from various departments to learn from one another, which meant they could not create cross-functional reports or get involved in cross-functional team projects. A situated-action, context-sensitive system feedback mechanism that introduced the relevant role in the organization would have reduced such frustration. Given that all staff had undergone SAP training, management expected them to have adequate knowledge of the SAP business process models across business functions. Thus, the discipline imposed on their operation caused much frustration. Yamauchi and Swanson (2010) relied on SLT to understand and explicate the local learning process in a bank during assimilation of a CRM system and also found similar results in that the user (bank) representatives created familiarity pockets in which they routinely worked with the system, but outside of these pockets they competently ignored it.

Understanding SAP’s distinct terminology represented another obstacle that staff had to deal with. Staff needed to comprehend and communicate with this terminology with SAP’s various stakeholders. However, they struggled to understand it. As a system analyst said:

The [SAP] terminology was a major barrier. It still is I think, because regardless of which system you used before, it didn’t matter if you didn’t work here before and if you started working once implementation came on board you still had to learn the terminology.... With the terminology, it’s really important to get it right because if you are talking to a developer they are just going to look at you as if you’ve got an egg coming out of your arm. They don’t understand what you mean unless you use their terminology.

SAP training did not evaluate ERP users’ knowledgebase and introduced terminologies (and expected underlying practices) that did not motivate individuals to participate in cross-functional activities and to develop the identity they needed to further master and own their tasks.

Further, staff also did not adequately understand SAP’s strategic importance and, in particular, its reporting power. Although top management understood the importance of SAP as an “information-rich system” that can produce a large set of reports for decision making, staff failed to appreciate this fact. The program manager explained SAP’s benefits:

SAP is very information-hungry system. There is so much data in them. Like there are screen and screens of information and in all these screens there are 40 tabs worth of information. The aim of capturing additional information is to have better reports which can assist in decision-making eventually.

However, staff did not realize that entering accurate and complete data had additional important implications; that is, a new set of task dependencies with staff in other departments, and executive managers could be the customers of these new reports. Because they lacked knowledge about such task dependency under SAP, staff could not see beyond their own local practice and, instead, perceived the complex data entry as a “complicated”, “difficult”, and “time-consuming” process. As two interviewees said:

SAP is very time consuming. There is a lot of data and information in SAP so to do one thing it might take two steps in Oracle but in SAP it might take four to five steps to complete one task. (Business system analyst)

My experience has been it is very difficult; I found it a very difficult system to use ... other people, my colleagues make the same observation, but certainly from my point of view it is a difficult system to use, [it is] more time consuming to complete tasks, to raise the invoice and that sort of thing. (Service desk)

Staff failed to recognize SAP's role in decision making and its strategic importance. As a result, staff struggled to perform their duties even several months after implementation. Thus, unsurprisingly, staff's poor understanding of SAP and its role and their everyday frustration with its use resulted in their resistance to it. Although not always overt, we detected resistance in different guises, which the following quotations evidence:

They fought against it [the SAP implementation], which I think is natural. For a long time, it was always that standard response. We didn't have to do this before, it wasn't like this in the old system and it was better. So, there was a constant comparison of old versus new. I think a lot of people struggled with it. Struggled in terms of being able to get their work done, waiting for someone else to fix their problems. (Business analyst finance)

[T]here were some very precious personalities who took the approach of "I am too busy, I am too important, I have trouble connecting"—[while] you know, there's no trouble connecting at all. They are on the remote sites, some of these people but they make the excuse of having trouble connecting. Or "I don't have enough resources to do this". Whatever excuse you could think of, they came up with it and the resistance was really quite strong. (Program manager)

Some staff resisted the use of SAP for reporting and kept on using the old applications. They: used Excel as a bypass for SAP.... People had to adapt and had to change the way they worked. [But] there was a lot of resistance in terms of the processing. People did not want to adapt to it. They wanted to continue creating things on Excel and sending them out. (Program manager)

The staff did not know about their new/expected identity under ERP where their social actions contributed to developing reports for others (e.g., for the top executives). SLT explains that such a lack of "identity" and not knowing where in the overall work landscape one stands arises due to top executives' insufficiently (directly/indirectly) "participating" in various business processes. Bravo had no mandate that staff had to share ERP-specified knowledge about the strategies and supportive organizational resources. Ideally, all individuals should know not only about their own activities and tasks but also how and in what context others in the organization will use the results from those tasks. Organizations can ensure they do so through enabling staff members to participate in various forms with other staff in relevant roles across various decision making levels in the organization.

In Bravo, we found that staff resisted SAP more passively than actively. One can view this passive resistance as their feeling threatened from having to both down-skill and up-skill at the same time. On the one hand, they had to give away their expertise of legacy systems and existing business processes and, on the other hand, work with an unknown system that they considered inferior to the legacy systems.

4.3 Not Addressing Emerging Learning Needs

This new system required staff to learn new IT skills and acquire new business process expertise. Above all, many feared losing their job. As one interviewee said:

Some of these people have been in their jobs for 20 years. If you suddenly put a new system where its showing up that perhaps they can't do their jobs effectively, the fear of losing their job and fear of losing their income, all that—so fear is the big factor. (Change manager)

Once again, ignoring emerging learning needs led to an identity crisis, which, in turn, resulted in a lack of effective participation and practice.

The above findings reveal that the company's individually based cognitive learning paradigm of the organizational learning that the SAP consultants provided during the implementation phase did not satisfy

ERP users' dynamic needs. The company's adopted paradigm failed to develop a sense of identity among staff. Furthermore, this paradigm did not tailor each individual's task based on collaboration or in terms of each individual's position with regard to the circumstances in the world of social affairs (as Figure 1 shows) and the associated knowledgebase of other collaborating actors. As a result, staff participated in their new roles less effectively. The new system assumed that staff had a new and expanded identity. However, no one taught them such knowledge. As a result, they found social actions with the system to be meaningless, which resulted in a lack of identity among them. This case exemplifies an identity crisis that resulted in less effective participation and practices. To solve the issue, SLT proposes that the organization identify potential relevant participants and devise appropriate forms of participation among these relevant roles in the dynamic learning process.

4.4 Absence of Appropriate Social Context for Learning

As we mention in the beginning of Section 4, to achieve a smooth transition from the old to the new system, SAP consultants conducted a comprehensive change-management strategy with associated training using a generic simplified version of SAP training. However, after these SAP consultants configured the system, staff noticed that the training did not adequately teach them about SAP (see below responses) and they raised the issue to their supervisors. Staff failed to link the training with the work environment, which created a lack of identity among them in relation to their role in the system. A handful of factors, in addition the ones mentioned before, contributed towards this inadequacy and disconnect. As various interviewees said:

We did have a very simple training session in September before we went live. It was too early and everyone forgot as soon as they left. (Business support officer 1)

We didn't understand the connection between the training that we were given and the actual usage of the SAP as it was irrelevant and too simple. (Senior system analyst)

We had two days' worth of training. The training was so simple that it was like ABC. It was too basic as compared to our routine task. (Business support officer 2)

The SAP training failed to provide adequate local knowledge that individuals can gain only when working in the actual social context. As for why, one reason concerned the nature of the "test data" that the training contents used as a senior business analyst explained:

[Training] was fairly generic and simplistic. As it was always a perfect scenario so what we were actually taught was how to pay a new invoice, so it was all very nice but most of the invoices we get, I'd say we found out 50 per cent, we could not process because of our purchase order was wrong or something else was wrong with the invoice or it didn't match, the contractor invoices didn't match the time sheet et cetera and so forth.

The external SAP trainers had limited knowledge about the company's business processes and did not deliver training that mirrored actual business processes in Bravo. Several interviewees noted as much from their inability to answer complicated questions:

The people who came to train us were the people who had used SAP so they had a general knowledge of SAP but again their ability to answer the question would have depended upon the question that we put to them. For example, so if people ask them general questions yes they will get a laugh and give you the answer, but potentially when you asked so okay in this business situation how would you do this and a lot of time the trainers didn't know. (Business analyst)

I sort of felt they [trainers] weren't aware of what we needed. They just said and taught in the classroom that this is how you do it. I don't think they were aware of our needs. (Business service officer 1)

They [trainers] don't understand accounting. They aren't accountants. They are consultants in projects, so yeah the screen can do this and that but I have asked many times show me everything you do with an accounting entry behind it, but they could not answer it. (Business service officer 2)

The above analysis highlights that the training lacked social context. As a result, inappropriate practices occurred later on in post-implementation practices. Such a disconnect between the training and actual work practices arose mainly because the training was too simplistic and basic, was organized too early,

and was not related to the actual processes and work practices. This disconnect between the training content and actual work practices served as an additional factor that inhibited staff learning of SAP.

4.5 Absence of a Social Context Leads to Misinterpretation

We also discovered a misunderstanding about training adequacy between the top management and staff. While staff felt the training they received was too simple and disconnected from actual work practices (as we discuss above), the top management had an implicit presumption that it was “extensive”, “detailed”, and designed by experienced trainers with extensive SAP knowledge. The project manager expressed the management’s view:

We actually did an extensive training exercise, which I think is something that we have done very well. We had the expert trainers with extensive knowledge of SAP and they designed the detailed material to handle business operations using SAP.

The chief information officer (CIO) supported the project manager’s view:

We were aware of the importance of training and that’s why we hired [the] best training consultants with extensive SAP training experience. I think they have done a great job.

When asked about why staff perceived the training as simple, too limited, and inadequate, the program manager responded:

Hard to say.... What tends to happen is those people who sleep during the training [later complain] and they probably wake up when we go live.

However, from the staff’s perspective, formal training did not fully address their learning needs, was too general, and ultimately unhelpful. As a result, the gap widened between users and management about the training’s adequacy. Management ignored staff’s reservations about the training’s inadequacy and assumed that they were “lazy”, whereas the users viewed the simplicity of the training program as management’s underestimating their needs. This belief added to their reservations about management and their less desirable approach towards SAP training. This misunderstanding left staff disappointed and disoriented as one business analyst said:

We did not know where to go and how to solve the problem. We felt like that’s enough and that was the case for the first few months. It wasn’t the case with me only but everyone was in the same boat. So whenever we met, we shared [our] problems and didn’t know what to do about them and we felt like no one was understanding our pain.

Misunderstanding between the management and staff began before the SAP implementation. The management did not involve staff early on in the planning and customization process. Pressed by the time constraint of going live by a predetermined date, management excluded staff from this process. However, staff felt their inclusion could have prevented their helpless situation.

5 Discussion

Learning in a working environment enables people to learn in context. In such a way, they can make sense of new concepts, tools, and processes as part of everyday practices and, thus, relate the new with the familiar. This is what seems not to have happened in Bravo. By using SLT to interpret the sequence of events and issues, we found a disconnect between learning and working. Staff were supposed to have learnt about SAP during the training sessions that took place long before the implementation, but the SAP training was generic and not related to the particular work practice and business processes in Bravo. Beside the lack of social context, the training process did not explicitly identify individuals’ participating roles.

Our using SLT for this study concurs with other studies in ES that have also used SLT to understand and explicate the local learning process in a bank during and after it implemented a CRM system (Vaast & Walsham, 2009; Volkoff, Elmes, & Strong, 2004; Yamauchi & Swanson, 2010). Specifically, we selected SLT for the study for two main reasons:

- 1) Current conceptualizations of relevant complexities do not fully problematize the interdependence of tasks and ES (Elbanna, 2006), and

- 2) We believe that theoretical frameworks under the organizational adaptation approach can explain the relationship between ERP systems implementation success and organizational learning. Indeed, other studies have also found as much (Davenport, 2000; Morris & Venkatesh, 2010; Peppard & Ward, 2005). Among the informal learning mechanisms, situated learning provides benefits to organizations that they cannot attain through other means—particularly in cases such as Bravo where the ineffectiveness of formal training causes an organization to fail to achieve anticipated benefits (Al-Mashari & Al-Mudimigh, 2003; Grossman & Walsh, 2004; Hsu et al., 2006; Nicolaou, 2004; Tsai & Wang, 2008; Venugopal & Rao, 2011). ERP systems strengthen relationships among the users more than legacy systems do. Therefore, learning emerges as users interact in the context of established routines and procedures (Chang & Chou, 2011; Nicolaou, 2004).

Benders, Schouteten and Aoulad el Kadi (2009) provide a similar case of an ERP systems implementation. They found that the ERP systems implementation initially failed because of increased job demands: the jobs became “more complicated and therefore more challenging than before” (p. 650). In another case of SAP implementation, Klaus and Blanton (2010) found that system complexity and adversity led to user resistance. They attributed this resistance to the users’ physiological contract: “users who have been employed by the organisation for multiple years may assume that they have been at the job long enough to figure out how things are done and thus low complexity is part of their psychological contract” (p. 631). Similarly, Vandaie (2008) argue that staff’s expertise in a legacy system prevented them from acquiring the knowledge of a new system. Vandaie (p. 923) elaborates:

As the view changes from task-focused to the process-focused by implementing ES, employees need to know how their task fits into the overall process and how that process contributes to the achievement of organisational objectives. However, employees’ expertise about the “task-focused” approach hinders...[them from] adopt[ing a] “process-oriented approach”.

The situation in Bravo demonstrates that staff were confident and familiar with the legacy system’s operations and characteristics. However, they could not understand the terminology and operations of the new SAP system. The SAP processes were complex, unfamiliar, and required new skill sets. Moreover, staff preserved their old mind sets about the system operations and related technology while trying to use SAP after going live. Engaging with the new system—SAP and its embedded business processes—using the old mind sets prevented effective learning processes. As Snell and Chak (1998) mention, this situation is typical: with obstructed learning, neither individuals nor the organization learn.

In addition, the formal training did not relate to the staff’s work problems and practices because it was simple, generic, and conducted too early and by external trainers who had limited knowledge about Bravo’s business processes. Nicolaou (2004) argues that simple and early ERP systems training creates a gap between the training provided and the knowledge that staff require to use SAP effectively. Similarly, Yi and Davis (2003) observe that the complexity of ERP systems limits the amount of knowledge that staff can absorb before they actually use an ERP system. Chang and Chou (2011) recommend that staff must engage in learning during the implementation process to acquire the knowledge and skills required to effectively use an ERP system. A lack of training in a work context may result in organizations’ not achieving the anticipated objectives when they adopt ERP systems. Formalized training, as Brown and Duguid (1991) explain, actually encourages down-skilling, which is generally unhelpful for learning because formal training rests on the assumption that employees are untrained, uncooperative, and unskilled and, thus, that they require an overly simplistic training program.

The SAP training in Bravo provided “know that” (about the explicit facts, rules, and procedures) but failed to address “know how” and “know why” (Ho, Wu, & Tai, 2004; Markus, Tanis, & Van Fenema, 2000; Rivera & Goasduff, 2013; Yu, 2005); the latter explicitly address the situation and context in which the dynamic process of learning occurs. SLT can best explain the latter two questions through focusing on identity-building and participation (see Section 4.3). Furthermore, the findings from Bravo mostly concur with Robey et al.’s (2002) findings that indicate simple and generic training can create knowledge barriers and inhibit learning.

In addition, in Bravo, staff and the top management disagreed about the formal training’s usefulness and completeness. This reliance on the formal training program simply blinded management and the trainers and prevented them from appreciating the actual complexity of business operations and staff expertise. It isolated the learners (staff), who could not understand the implicit assumptions about business processes

and practices in SAP. Therefore, unable to find ways to understand and learn SAP and its embedded business processes, staff felt helpless and frustrated.

6 Contribution, Conclusion, and Future Research

This study makes two main theoretical contributions: 1) it identifies learning issues that arise in the post-implementation phase of ERP systems via adopting situated learning theory and 1) it develops a higher-order understanding of the above learning in a real-world organizational context. Practitioners involved in ERP implementation projects can use our findings to enhance the effectiveness of ERP users' training and learning processes. Similar to any IT-driven organizational change, one can study ERP implementation through various theoretical perspectives. Considering the lack of theoretical research in the specific ERP domain, we provide in-depth theoretical insight into post-implementation issues using SLT. Guided by this theory, we found a disconnect between learning and working for various reasons. At the post-implementation phase, such disconnection hindered staff from learning and eventually barred the organization from achieving the anticipated benefits. This study contributes to the literature on ERP post-implementation by theoretically analyzing the main issues that emerged during the post-live phase at an organization. Practitioners can use our findings to better comprehend the post-implementation phase and design effective strategies to counter the issues we identify. This paper uses data from one data-collection round; we also plan to investigate how the case study organization learned about and eventually addressed these issues.

One major limitation of the study concerns our ability to participate and observe business processes and the working of diverse groups and committees. We were not able to attend all of these during our case study; therefore, we relied on interviews and discussions with key actors in Bravo.

The second limitation relates to our ability to acquire interpretive insights on the people studied. Although we have considerable knowledge of Bravo, its working processes, and its culture, we recognize that interpretations of individual actors and their actions demanded an iterative process of interpretations and reinterpretation.

Finally, while we successfully identified a disconnect between the supply and demand sides of the learning, we believe that, to address the nature of such disconnect, an organization must approach ERP enactment as an organizational learning process and build from two theories of learning: 1) community of practice theory that draws attention to situated learning in practice and 2) the theoretical perspective of single- and double-loop learning by individuals, groups, and an organization as a whole.

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