2008

The Diffusion of Enterprise Systems Within Organizations: A Social Learning Theory Perspective

Oswaldo Lorenzo
Instituto de Empresa, oswaldo.lorenzo@ie.edu

P Kawalek
Manchester Business School, peter.kawalek@mbs.ac.uk

B Ramdani
Manchester Business School, b.ramdani@gmail.co

Follow this and additional works at: http://aisel.aisnet.org/ecis2008

THE DIFFUSION OF ENTERPRISE SYSTEMS WITHIN ORGANIZATIONS: A SOCIAL LEARNING THEORY PERSPECTIVE

Lorenzo, Oswaldo, Instituto de Empresa Business School, Maria de Molina 11, Madrid, oswaldo.lorenzo@ie.edu

Kawalek, Peter, Manchester Business School, Booth Street West, M15 6PB, UK, peter.kawalek@mbs.ac.uk

Ramdani, Boumediene, Manchester Business School, Booth Street West, M15 6PB, UK, b.ramdani@gmail.com

Abstract

Enterprise systems (ES) diffusion in organisations has been described in the technological innovation literature to progress linearly from one stage to the next. However, empirical investigations in the area suggest ES implementation is an ongoing process, going back and forward, and that in some cases never stop. Having reviewed studies using social learning theory (SLT), we propose that companies should manage the implementation of an ES as a gradual and progressive diffusion process that takes a long journey. Our investigation focused on the study of ES diffusion within sales and distribution area in a Latin American company dedicated to the processing and distribution of roasted and ground coffee. It has been found that a particular set of characteristics force companies to implement ES by phases, going forward and back, and activating several projects over the same areas once and again. Therefore, it has been suggested that companies could consider the implementation and diffusion of ES as a seamless process, which may be an endless one. This study contributes to the theoretical understanding of the diffusion of ES from a novel SLT perspective.

Keywords: Enterprise Systems, Social Learning Theory, Adoption, Diffusion

1   INTRODUCTION

Enterprise systems (ES) are the type of information systems (IS) that organizations implement to "restructure interactions among groups of employees or with business partners." (McAfee, 2006, p. 145). In other words, this type of IS enables the integration of business processes within organizations and allows the improvement of coordination among functional departments, business units, and/or with providers and customers. Enterprise Resource Planning, Customer Relationships Management, and Supply Chain Management are some examples of ES. Many authors have reported that ES are complex technologies because of their sheer scale, off-the-shelf scheme, and the organizational, operational, and technological changes they introduce within organizations (Davenport 2000, Robey et al. 2002). The high rate of failure has given rise to analyzing this phenomenon from different management perspectives (e.g. Ettlie et al. 2005, Boudreau et al. 2005, Park et al. 2007).

The enterprise systems' integration offering brings particular characteristics to the implementation process. This offering is possible because of a single database and the modular constitution of ES. Companies often implement the system under a phased scheme in which each phase encompasses the adoption of a set of functionality or just one of them. Then, each phase is part of the entire journey. Even more significant is the fact that once the system is initially adopted by a functional department or business unit, more technical adjustments or complementary changes have to be implemented while the adopting unit is using the system. Additionally, it is also possible that the system adoption in one business area gives rise to changes in the system configuration or model in other process-related areas in which the system was already implemented. This raises the question of when the adoption actually ends. Experts talked about the "finishing" of an ES deployment and they concluded that many of these projects simply are never over (Ettlie et al. 2003). This is a challenge for scholars and practitioners interested in this field. The situation described above also occurs in the study of other types of innovation (e.g., see Cool et al. 1997, Mansfield 1993).

"*For innovations like flexible manufacturing, robotic systems, or business computing, the process of diffusion inside organizations is not brief and episodic, but may be gradual, involve repeated decision making, and span a considerable period of time.*" (Cool et al. 1997, p. 543).

As Cool and her colleagues argue, a "progressive implementation" or "gradual adoption" seems to be the correct approach for deploying this kind of innovation inside an organization. However, this approach calls for a distinct perspective beyond the traditional ones (e.g., those of technological innovation perspective) when an organization faces the implementation of such an innovation. The technological innovation perspective (Rajagopal 2002, Cooper and Zmud 1990) divides the implementation experience in several phases. For example Cooper and Zmud (1990) describe the following ones: initiation, adoption, adaptation, acceptance, routinization, and infusion. We suggest that this "stages" approach to study innovations is incomplete for the ES deployment because the separation in implementation phases may be ambiguous. Simply there are no visible decoupling points between the stages in the implementation of an ES. The implementation is an ongoing process, going back and forward, and that in some cases never stop. We propose companies should manage the implementation of an ES as a gradual and progressive diffusion process that takes a long journey.

In the light of the above, a challenging research question emerges. How should an organization manage a gradual and progressive diffusion process for ES? We propose that the progressive diffusion of an ES within an organization is a social learning process in which the key-users responsible for each organizational area are the cornerstone of the diffusion journey. This is similar to the approach followed by Cool and her colleagues (1997). As they argued, to study the diffusion of an innovation within an organization "*we viewed the organization as a collection of subunits or social subsystems within each of which a separate process of diffusion takes place*" (p. 557). In this journey, key-users progressively develop behaviours toward the diffusion of the system into their business areas. These behaviours are influenced by three factors: organizational environment, personal factors of the key-user (including cognition), and key-users' behaviours.

2 SOCIAL LEARNING THEORY: A THEORETICAL FOUNDATION

Social Learning Theory (SLT), also known as Social Cognitive Theory (SCT), has its roots in the work of the psychologist Bandura (1969, 1977, 1986). This theory is fundamentally a behavioural theory of learning from other people (i.e., social learning). This is described by Davis and Luthans (1980) as a vicarious process. "*Learning can take place vicariously through observing the effects on the social environment of other people's behaviour*" (p. 283). SLT encompasses three primary variables: the person (including internal cognition), the behaviour, and the environment. The theory proposes that these three variables interact with one another to explain individual actions (i.e., behaviour). In other words, behaviour is defined by the interaction among a person's cognition, his/her behaviour and the environment.

The application of SLT to the study of individual behaviour to computing technology is a recent research interest in the IS field. In particular it is significant the number of studies focused on the link between self-efficacy and individual reactions to computing technology. Self-efficacy is a concept derived from SLT. Compeau and her colleagues (1995, 1999) developed a computer self-efficacy construct and they contributed to the creation of the initial foundation for the study of IS phenomena by applying SLT. The application of SLT in IS studies has focused on just one of the relationships in the SLT model: that of person's cognitive perceptions (e.g., self-efficacy) and behaviour (e.g., computing use).

How does the environment interact with the other two variables in IS phenomena? What types of behaviour can affect on the final use of IS? and what cognitive interactions are better for IS implementation? are still unanswered questions. Furthermore, a broader study of social learning for IS phenomena may imply the use of qualitative methods (e.g., longitudinal case studies), instead of quantitative studies. In particular, and as we attempt in our study, SLT may offer a powerful theoretical framework to a better understanding of complex IS transformation processes such as the adoption and diffusion of ES.

3 RESEARCH METHOD

This study is part of a larger investigation of ES diffusion and infusion. It accompanies a description and analysis of ES models of diffusion and infusion (Lorenzo et al., 2005; Lorenzo and Kawalek, 2004). However, here, the motivation is to explore the different levels of performance by and within companies. In one company that reported successful ES adoption, the authors found that this success originated from a specific single business area. However, other business areas were performing significantly differently. This observation allowed us to explore circumstances wherein the same environmental motivators were present for all areas, but some areas were still reportedly more successful, whilst others evolved more slowly. Why does an enterprise system diffuse differently among different business areas within the same company? This research question motivated a further study of two business areas in the company under study. Here we only report one of them. We selected the ES key-user as the unit of analysis. This term, "key-user" is native both to the company in question and to other ES and IS environments (e.g. Boudreau and Robey 2005). It relates to users of the system who play a designated role in implementing the system and helping other users learn about the system. In this case, for the most part, these key-users were business-area managers. The selection of the key-user role as the unit of analysis allowed us to focus the study on individual behaviour to ES diffusion. Subsequently, the boundary defines the organization as the environment or context. The environment here includes, amongst others, upper management (e.g. CEO), implementation teams or committees (e.g. KU committee, and consultants), final users, and employees in areas adopting the system. There are pros and cons for this unit of analysis. One pro is that the study of ES diffusion from the individual point of view may bring out new insights. One of the cons is that we may miss the big picture and undervalue possible factors that could come from outside the unit of analysis.

4 SITE DESCRIPTION

CC is a nationally leading company in the processing and distribution of roasted and ground coffee in one of the Latin American countries. Since 1992 CC has exported green coffee to the USA and Europe. In 2001, it earned US$45 million in gross revenues and employed 370 persons. The CC's supply chain is composed of 1) several procurement centres located in coffee regions over the country, 2) a modern factory where coffee is roasted, ground, and packaged, 3) a fleet of trucks to deliver products to regional centres, 4) twelve regional distribution and warehouse centres from where the company distributes its products to 11,900 final retailers through 5) forty-three independent intermediaries. CC has also a sales force of 35 persons, which is responsible for selling to more than 700 large retail destinations (e.g. large supermarkets and chains). The area under study in this investigation is sales and distribution (S&D), which is in charge of the processes of sales and delivery from regional centres to retailers. The manager of this area was designated as the key-user for the diffusion of the ES within his/her area. .

CC acquired its ES in 1997 by purchasing it from one of the top five vendors. A first set of functionality of the ES was installed between 1997 and 1999. The functionality initially installed included features of finance, materials management, sales administration and manufacturing. This first version of the system was available for use in 1999. Since 1999 the organization was engaged in a diffusion process of the ES to support more organizational functions and business units. This study reflects the story between 1997 and 2002. However, the authors know that the company continued this process beyond 2002. The year 1999 represents a decoupling point in the CC's story of implementing its ES. The first implementation carried out between 1997 and 1999. This followed a traditional implementation approach. That is, an implementation project focused on adopting a set of functionality in some business areas. To do this, they organised themselves in a project team composed of seven internal resources and some external consultants. They did it as a project with a beginning and an end. As with any project, this is normally defined as a temporal process. Since 1999, the company changed the implementation model to one with a long-term perspective as it is explained below. No phases were stated. They talked about implementation as an end-less process composed of infinite number of projects. In the description of the evidence we decided to present them accordingly to the year of occurrence. Thus, between years 0 and 2 the evidence refers to the first implementation experience. Between years 2 and 5 the evidence refers to the second implementation experience following a long-term approach.

5 DATA COLLECTION

We captured the process through a combination of real time and retrospective analysis . Frequent visits were carried out over a period of three years. The primary methods of data collection were semi-structured interviews, observation and documentary review. Forty-one semi-structured interviews were conducted for the whole study, each lasting an average of one and half hours. The interviews included people related to ES implementation in one way or another: the CEO, the CFO, functional managers (key users), end users, technical specialists, members of the personnel department, and ES consultants. For the case reported here the data for the analysis came from 20 interviews as described in Table 1. We also carried out participant observation in several key-users committee meetings – each dedicated to managing and evaluating the ES implementation and lasting an average of three hours. Some training sessions were also attended. A review of documents focused on memos, users manual, procedures, system manuals, and reports of earlier implementation phases.

Following the recommendation from the ES outsourcing firm, the CEO created the key users (KU) committee. Although the original idea was that this committee would monitor the ES consultant's service levels, the organizational dynamic converted it into the leading group for ES diffusion throughout the company. This was composed of seven business-area managers (e.g. finance, S&D,

logistics, and IS). In addition to the S&D key user, the KU committee designated two change agents for the diffusion of the ES throughout the remote centres. These change agents were members of the S&D central area located in the factory. This team of three people was in charge of the implementation of the system in each remote S&D centre and the training and supporting of the final users. Given the relatively high number of remote centres, change agents were key for dealing with the workload of all diffusion activities. The diffusion throughout the S&D area was then carried out by the S&D key user, two change agents, and one consultant from the ES outsourcer.

Position	Role	Nº of interviews
CEO	Key User (KU) committee leader	2
CFO	KU committee member	1
IS Manager	KU committee member	4
Sales and Distibution (S&D) Manager	S&D key user	3
3 Regional warehouse administrative assistants	Final users	3
Accounts receivable assistant	Final user	1
IS technical assistant	Internal help desk member	1
2 S&D supervisors	Change agents	4
ES outsourcing consultant	ES consultant	1
Total		20

Table 1. Interviews conducted as part of the S&D area.

6   DATA ANALYSIS

In CC, an iterative approach of data coding and analysis (Miles and Huberman 1994) focused on the development of concepts and constructs associated with the social learning process in the organizational diffusion of the ES. Even though these concepts were initially classified following an open coding technique (i.e. concepts are suggested by the data), the emerging concepts were re-organized by taking into account "some potentially important variables" (Montealegre, 2002) from the SLT literature. But this was done without thinking of specific relationships between variables. It is important to note that the three main variables from the SLT (i.e. environment, person's cognition, and behaviour) are very general and there is not a previous conceptualization of them in an ES context. Hence, one of the aims of this study is to enhance the understanding of these variables as factors modelling the diffusion of ES.

This study follows the tradition of interpretive research (Walsham 1995). This is helpful to understand human thought and action in social and organizational contexts (Klein and Myers, 1999). The development of constructs and the drawing of patterns were based on the following steps: audio tapes and field notes, hand-written transcripts, interim summaries, coding, data displays, verification and conclusions. The three first steps were carried out by the first author. Coding and data displays followed an interative process carried out by two authors. Verification and conclusions were carried through the involvement of the authors and the KU committee. Data displays were critical for the analysis. We followed Miles and Huberman's recommendation (1994) of using data displays as a vehicle for drawing valid conclusions. Tables and nodes were the data displays used in this study. One of the nodes developed is reported in the next section (see Figure 2).

A social learning theory of ES organizational diffusion postulates the following claims:
- Key-user behaviour is the crucial factor in the diffusion of an ES into an organization.
- Key-user behaviour toward the ES diffusion is caused by his/her cognitive processes and environmental influences.
- Key-user behaviour, because of reciprocal determinism, shapes the environment and influences key-user's future cognitions.

A number of studies have acknowledged the impact of environmental or contextual factors on the implementation of an ES (Esteves and Pastor 2001, Davenport 2000, Markus et al., 2000). Research has also been developed to study the role of key-users and other end-users in ES implementation (Kawalek and Wood-Harper 2002, Lim et al., 2005), but there exists no study that positions the key-users' cognitive factors in amongst a broader ES adoption processes. There has not been a study of the reciprocal effects among the three factors (i.e. environment, cognition, and behaviour) in ES diffusion. Figure 1 depicts the application of the SLT to the organizational diffusion of an ES. The constructs are explained below.
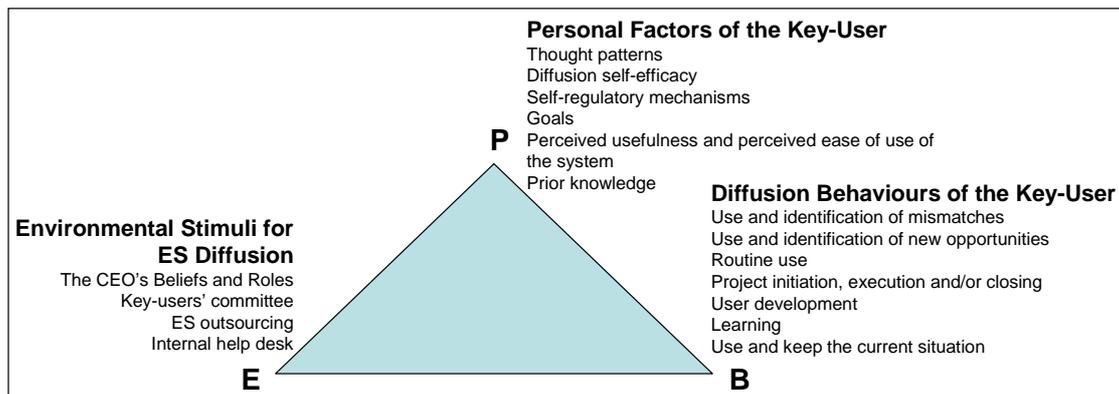

Personal Factors of the Key-User
Thought patterns
Diffusion self-efficacy
Self-regulatory mechanisms
Goals
P Perceived usefulness and perceived ease of use of
the system
Prior knowledge

Diffusion Behaviours of the Key-User
Use and identification of mismatches
Use and identification of new opportunities
Routine use
Project initiation, execution and/or closing
User development
Learning
Use and keep the current situation

**Environmental Stimuli for
ES Diffusion**
The CEO's Beliefs and Roles
Key-users' committee
ES outsourcing
Internal help desk

E **B**

Figure 1.A Social Learning Theory of ES Organizational Diffusion

By considering key-users as the unit of analysis of this study, environmental factors are those organizational stimuli that may influence the key-users' behaviour. From the analysis of the key-users under study, we found the following four environmental stimuli functioning in the reciprocal interaction of the social learning triad: (1) CEO's beliefs and roles, (2) KU committee, (3) ES outsourcing, and (4) Internal help-desk.

SLT suggests that cognitive processes and personal factors play a critical role in determining how people behave. "Cognitive factors partly determine which external events will be observed, how they will be perceived, whether they leave any lasting effects, what valence and efficacy they have, and the information they convey will be organized for future use." (Bandura 1977, p. 160). In this study we have identified differences in the KU's values, goals, and ways of thinking that are significant in their impact on the performance of the ES diffusion process. From the analysis of two key-users and internal change agents working for the S&D area, it was found that the following six personal factors functioned in the reciprocal interaction of the social learning triad: (1) thought patterns, (2) diffusion self-efficacy, (3) self-regulatory mechanisms, (4) goals, (5) perceived usefulness and perceived ease of use of ES , and (6) prior knowledge.

The final component of the SLT triad is behavior. Behaviour is defined by Bandura (1969, p. 73) as "a complex of observable and potentially measurable activities including motor, cognitive, and physiological classes of responses." When talking about behaviours one should describe them according to the intended goals they aim to achieve. From a deep analysis of the empirical data in this study along with a review of ES and innovation literature (Boudreau and Robey 2005; Lorenzo et al. 2005; Markus et al., 2000; Leonard-Barton 1988), we have defined six behaviours which reflect the goal of diffusing the system throughout business areas. A seventh behavior describes a neutral response (or negative) by the key-user toward the objective of diffusing the system. It is important to mention that these behaviours are related to the ES diffusion process. In other words, once the system is up and running in several functions or business areas, key-users who are members of the KU committee take one of these behaviours to diffuse or not diffuse the system throughout their areas. The seven behaviors are: (1) use and identification of mismatches, (2) use and identification of new opportunities, (3) routine use, (4) project initiation, execution and closing, (5) user development, (6) learning, and (7) use and keep the current situation.

CASE: SALES AND DISTRIBUTION AREA

Figure 2 suggests that the S&D key-user's diffusion behaviour (B) is influenced by the internal factors of the key-user (P) and the organizational environment (E). Furthermore, this internal (P) and external (E) factors can be reciprocally impacted by the key-user's behaviour (B). The figure also describes the triad for the S&D change agents.

Since all relationships in the SLT triad cannot be simultaneously studied (Bandura 1986), we have focused our analysis on the diffusion behaviours of key-users that are relevant ones for our research question. We therefore describe below how the diffusion behaviour of the S&D key-user evolved during three and half years to achieve his goal of diffusing the system throughout his business area. It is argued in this description that this behaviour (B) was influenced by internal factors (P) and the organizational environment (E).

At year 2 of our study, the S&D functionality already installed in the factory started to be diffused throughout the rest of remote regions over the country. The project initiation (B) was the first "observable activity" performs by the key-user (see triad 1 in Figure 2). This activity was initially planned to be undertaken in one of the regional centres. This would be the pilot diffusion project. The project initiation (B) was positively influenced by the CEO's beliefs and roles (E). The CEO had previously suggested in a KU meeting that the S&D processes were a priority for the diffusion journey. This decision was mainly influenced by the industrial environment whereby competition and high-demanding customers (e.g. large retailers) were pushing toward excellence. Moreover, CEO continuously asked in the KU committee for more and better figures of the sales in the regions. Real time information was critical for facing the competition and meeting the clients' needs.
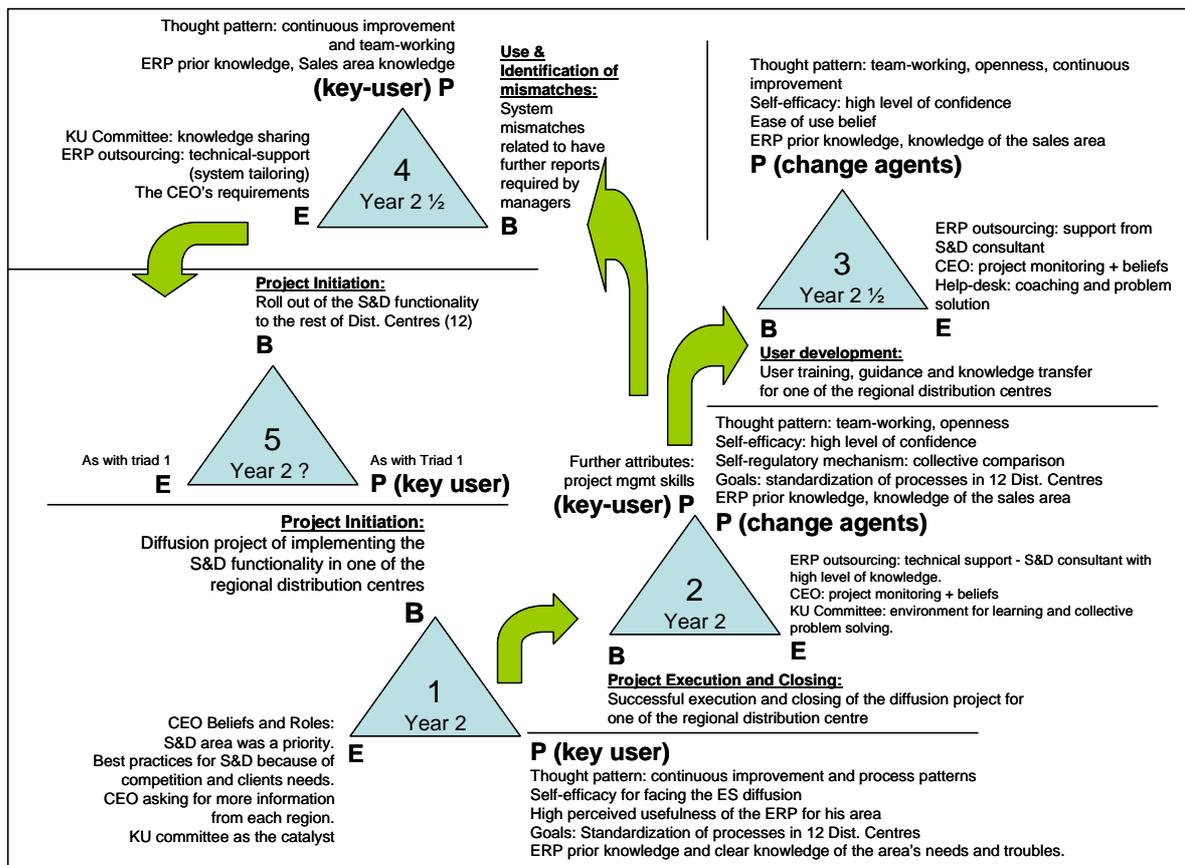

Figure 2 A SLT View of the ES diffusion: The case of Sales and Distribution Area.

The cognitive factors (P) of the S&D key-user determined that the environmental events were relevant and compatible with his own goals. This key-user had the clear and proximal goal of standardizing the processes of his twelve S&D regional centres. He had been suffering for many years the organizational chaos of managing twelve silos. His view of performing a business under a process perspective (instead of functionally) and his way of thinking of a continuous improvement pattern encouraged him to initiate and execute this project. His previous ES experience in another food company had enhanced his self-efficacy for facing this kind of project. He was also convinced of the usefulness of this system to improve the company's S&D processes and he had a clear knowledge of the area's needs. In sum, both the environment and the cognitive and individual factors positively influenced his behaviour toward the initiation and execution of this project.

During the same year 2 of our study the S&D functionality was successfully implemented in the first remote regional centre (see triad 2 in Figure 4). The project execution and closing (B) was undertaken by the S&D key-user and the change agents. Additional to the individual factors described in the triad 1, we found that the S&D key user was equipped with a further important skill to perform this behaviour of project execution: he had previous experience and knowledge of project management (P).

In the case of the two change agents, their individual and cognitive factors were positive components of this triad. We would like to mention in particular the following additional internal aspects from the change agents: team working and openness, prior experience using ES systems and high levels of confidence to face this process (i.e., self-efficacy), and high level of standard of behaviour (i.e., self-regulatory mechanism). Attitudes towards team working and openness were critical aspects to face this journey. Change agents were always receptive to opinions from others who would be the final-users in remote regions. This gave rise to an open and confident environment for change. They were gradually gaining the respect from others. The successive success in subsequent regions was creating a "friendly reception" environment in the remaining regions. Reciprocally, as suggested by Bandura (1986), their performance (B) strengthened their self-efficacy (P) and enhanced a favourable environment for change (E). Moreover, the members of the KU committee had their eyes on this diffusion project. The high expectations of success in the KU committee raised the level of performance standards for the S&D team (i.e. key-user and change agents). The team was embedded in a 'social comparison' context. This fact gave rise to a self-regulatory process in which the change agents were continuously working in the search of excellence for the project. They recognized that this was stressful.

The organizational environment was also a protagonist for the good performance (B) of this team. Three aspects were relevant: ES technical support, the CEO's project monitoring role, and KU committee as a catalyst. The change agents esteemed the role played by the ES outsourcing. One of them described it in the following way:

We had the support of a consultant from the outsourcing firm. This consultant was available for everything when we need something. This is important because when you are implementing and using a system is possible that anything can happen. Once we needed to ring her (the consultant) late at night to ask specific questions the certain problems we were unable to sort out. She (the consultant) came and helped us to resolve the problem. This is an invaluable help.

As mentioned before the CEO's was always monitoring the progress of this diffusion project. In addition to keep an eye in the project variables (e.g. time and resources), he was also supporting the change management with the regions. For example, without announcement he would ring a regional manager in a remote centre to ask things related to the diffusion project and/or to ask why certain sales figures were below the goals. This was possible because the CEO had real-time information relating to all regional centres. The unexpected call received by the regional manager gave rise to a feeling of "this is important for the boss". Then the CEO was encouraging new types of behaviour.

The closing of the project in the pilot regional S&D centre triggered the next action (B) to be faced. This was that of user development (see triad 3 in Figure2). As mentioned, the final-user development is beyond training. The change agents were coaching, guiding and transferring knowledge to final users (B). After the system was up and running in the first regional centre, the change agents (P) and

the designated ES consultant (E) were in place for two weeks stabilizing the system and solving any problem that happened. This was a learning process (B) for the S&D centre final users. After these two weeks, an internal help desk (E) took the role of giving remote support to the final-users. The two change agents were part of this help desk. They recognized that the most of inquiries coming from the regional centres were related to procedures and norms, instead of system issues. Additional training (B) were planned to resolve the identified gaps.

In parallel with the user development observable activity (B), the use and identification of mismatches (B) happened (see triad 4 in Figure2). This activity was mainly developed by the S&D key-user who was in charge of the evaluation of the day-to-day activities. As a member of the KU committee, he also shared knowledge with the rest of key-users and receiving additional requirements from the CEO and top managers (E). In particular we can mention the identification of mismatches (B) related to new reports required by top managers. These requirements activated the system tailoring made by the ES outsourcer (E). A way of thinking of continuous improvement (P) encouraged this behaviour of identification of mismatches and the concomitant definition of new requirements.

7   DISCUSSION AND INTERPRETATION

This study is based on behaviours of key-users in a single company, so any conceptual insight is limited to the context under study (i.e., the company) and to the focus on the key-user as the unit of analysis. More research is needed in order to verify these findings. As suggested by Eisenhardt (1989), these insights have been also tied to existing literature, which enhances the internal validity, generalizability and theoretical level of our theory.

First, and according to Bandura (1969, p.13), "a comprehensive theory of behaviour must explain how patterns of behaviour are regulated by the interplay of self-generated and external sources of influence." From the site previously reported, we can see that the key-users' behaviours toward the ES diffusion were influenced by cognitive factors and organizational stimuli. Even though the organizational environment was similar for all sites, one area performed better than the other in the objective of diffusing the system internally. The evidence shows that key-users' personal aspects were the fundamental factor for the performance of the diffusion. One can see that the sales and distribution key-user and change agents were well equipped in terms of skills, prior knowledge, and self-efficacy for the progressive diffusion of the ES in their areas. However, we can argue that the environmental stimuli performed by the CEO, ES outsourcer, KU committee and internal help desk encouraged favourably the behaviour of the S&D key-user and change agents toward the ES diffusion..

Second, "a comprehensive theory of behaviour must explain how patterns of behaviour are acquired." (Bandura 1969, p.13). One can see that the definition of goals for diffusion was a first critical factor to ensure the appropriate behaviour toward the diffusion. The S&D area had clear and proximal goals related to rolling out the system toward remote regions and implementing HHC. They started the diffusion journey from an upper level of goals. This was possible because the S&D key-user and change agents were equipped with higher level of prior knowledge than the rest of areas. Once the diffusion toward the remote regions ended, the implementation of HHC for intermediaries was activated.

Behind this approach of progressing gradually there is a good practice for behaviour modification when people face a complex transformation process like an ES, which is supported by Bandura (1969). Moreover, the starting point of goals relies on the level of individual cognition and factors of the key-users. Thus, high-levels will allow a speedier diffusion. This is an interesting insight. The diffusion of ES within the organizations' areas follows different speeds and relies on the key-users.

Third, vicarious learning played a fundamental role in the acquisition of the expected behaviours for the ES diffusion. Key-users were continuously receiving messages from the CEO and other key-users, seeing behaviours of others and their consequences, and living situations that reinforced new patterns

of thought and judgemental standards. This insight is supported by other studies in the ES field. For example, Ettlie et al. (2005) argue the following in their study of ES predictors of success:

"*During discontinuous change, there is no precedent and thus trial and error (on-the-job training) learning is not theoretically possible. When new technology is imported from outside the organization, the necessity for observational learning is heightened because there are few or no internally capable persons to practice the art. Senior managers, especially, need to model the behaviours necessary for the entire organizations emulate.*" (Ettlie et al., 2005, p. 955)

Fourth, the KU committee played a key role for this vicarious learning process. This committee was the environment in which key-users exchanged knowledge and influenced one another toward the creation of new patterns of behaviour. The KU committee was the catalyst for the diffusion process. Hence, this study suggests that the diffusion of ES within an organization would be significantly boosted by the creation of a designed social network to achieve it. This network should be composed of the top-management and key-users. This claim is also supported by other studies related to change management (e.g., Cross et al. 2007, Mohrman et al 2003, and Newell et al 2004). Mohrman and her colleagues (2003) pointed it out in this way:

"*New behaviours and schemata may be catalyzed through change-oriented networks such as design and implementation teams. But they take shape in the newly created work units where employees using newly developed processes and IT talk together about how best to get their work done in the new context. As people work in these new task networks, they collectively encounter novel situations and problems and make a myriad of adjustments, large and small, in how they work together.*" (p. 320).

The latter is even more significant in the diffusion of an ES within an organization because, as mentioned by McAffee (2006), enterprise systems (ES) are the type of information systems (IS) that organizations implement to "restructure interactions among groups of employees or with business partners." (p. 145). Then, a social learning and integration is vital for success.

8   CONCLUDING REMARKS

This study offers a social learning explanation for the investigation of the diffusion of ES within a company. This account has allowed the modelling of the ES diffusion as a progressive or gradual implementation process throughout the organization. A social learning theory of the ES diffusion presents the ES implementation as a pattern of behaviours that are the product of self-generated and external sources of influence. The diffusion behaviours are progressively developed over time. Environmental factors, vicarious learning, self-efficacy, self-regulatory mechanisms, and cognitive regulators play an iterative process of influences toward the development of behaviours for the diffusion of ES inside an organization. Figure 1 depicts our conceptualization of the factors modelling the ES diffusion from a social learning perspective. It seems to us that this is a contribution itself.

We also believe that this study has yielded some insights that could be useful for scholars and practitioners. Following are some of these implications:

- The investigation of ES diffusion should consider a complementary approach to that of technological innovation perspective. While the latter suggests that technological innovation follows a stages model, we propose to complement the study of ES diffusion through a progressive approach or gradual adoption. This means considering the implementation and diffusion of an ES within a company as a seamless process, which may be an endless process.

- The specific characteristics of an ES force companies to implement it by phases, going forward and back, and activating several projects over the same areas once and again. The stages model seems appropriate to study ES implementation in its early periods of the ES life cycle, but it seems to us that the stages model is insufficient to explain the post-implementation experience. The internal diffusion of the ES in an organization after the early stages of its life cycle is influenced

by key-user behaviour and cognition, whereby a social learning perspetive seems to complement the explanation of the ES implementation phenomenon.

- We argue that the implementation of an ES in an organization should follow a progressive approach based on the gradual adoption of the system throughout the enterprise. This implies taking a long-term perspective, instead of a short-term or mid-term one. This is a radical proposition with potentially significant implications for practitioners. The first is that organizations should place far less emphasis on the temporal aspects of projects. Projects will be part of a long-term journey led by key users. The role of vendors and top managers (i.e. the CEO) should be to create the appropriate organizational conditions for encouraging diffusion behaviours within the different business areas.

- The CEO should lead and create the means to facilitate the modelling of new beliefs, values and behaviours toward the diffusion of the ES within the organization. A fundamental means to achieve this objective is the creation of a social network designed on a long-term basis composed of the key users of functional departments or business units. Key users will be responsible of the development of appropriate behaviours toward the diffusion of the system within their areas. Moreover, they are responsible for creating, sharing and diffusing the knowledge related to the ES transformation.

- The speed of diffusion would rely on the prior knowledge and cognitive capabilities of key users and their team. The better-equipped would move faster, the less-equipped would go more slowly with a first goal of assimilating new skills, values, and behaviours, making for a long journey to achieve the business goals related to the diffusion of an ES within a company.

Our contribution follows the tradition of interpretive research (Walsham 1995). As argued by Walsham (1995), there are four possible types of generalizations from interpretive case studies: the development of concepts, the generation of theory, the drawing of specific implications, and the contribution of rich insight. In this in-depth case in one area of a Latin American company we have developed concepts from a social learning perspective for the study of ES diffusion. In addition, we have drawn specific implications for scholars and practitioners in the study and management of ES implementation phenomena. Further works should focus on the generation of theory and the emergence of richer insight. In particular, we are now running a multiple-case study (i.e., studying several key-users within the same company) in order to find similarities and differences that allow us to generate a more generic social learning theory for the diffusion of an ES within an organization.

References

Bandura, A. (1969). Principles of Behavior Modification. Holt, Rinehart and Winston, Inc.

Bandura, A. (1977). Social Learning Theory. Prentice Hall, Inc., Englewood Cliffs, NJ.

Bandura, A. (1986). Social Foundations of Thought and Action. A Social Cognitive Theory. Prentice Hall, Inc., Englewood Cliffs, NJ.

Boudreau, M. and Robey, D. (2005). Enacting Integrated Information Technology: A Human Agency Perspective. Organization Science 16(1), 3-18.

Compeau, D. and Higgings, C. (1995). Computer self-efficacy: development of a measure and initial test. MIS Quarterly 19(2), 189-211.

Compeau, D, Higgings, C., and Huff, S. (1999). Social Cognitive Theory and Individual Reactions to Computing Technology: A Longitudinal Study. MIS Quarterly 23(2), 145-158.

Cool, K., Dierickx, I., and Szulanski, G. (1997). Diffusion of Innovations Within Organizations: Electronic Switching in the Bell System, 1971-1982. Organization Science 8(5), 543-561.

Cooper, R., and Zmud, R. (1990). Information Technology Implementation Research: A Technological Diffusion Approach. Management Science 36(2), 123-138.

Cross, R., Parise, S., and Weiss, L. (2007). The Role of Networks in Organizational Change. The McKinsey Quarterly, April.

Davenport, T. (2000). Mission Critical: Realizing the promise of Enterprise Systems. Harvard Business School Press, Boston.

Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly 13(3), 319-340.

Davis, T., and Luthans, F. (1980). A Social Learning Approach to Organizational Behaviour. Academy of Management Review 5(2), 281-290.

Eisenhardt, K. (1989). Building Theories from Case Study Research. Academy of Management Review 14(4), 532-550.

Esteves, J. And Pastor, J. (2001). Analysis of Critical Success Factors Relevance along SAP Implementation Phases. In Proceedings of the 7th AMCIS, USA.

Ettlie, J., Davenport, T., Harris, J., Cantrell, S., Cotteleer, M., McAffe, A., Frei, F., and Perotti, V. (2003). ERP Redux. In Symposium at the Academy of Management Annual Meeting, Seatle, USA.

Ettlie, J., Perotti, V., Joseph, D., and Cotteleer, M. (2005). Strategic predictors of successful enterprise system deployment. International Journal of Operations and Production Management 25(9), 953-972.

Kawalek, P., and Wood-Harper, T. (2002). The Finding of Thorns: User Participation in ES Implementation. Data Base, 33(1), 13-22.

Klein, H. and Myers, M. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. MIS Quarterly 23 (1), 67-90.

Leonard-Barton, D. (1988). Implementation as mutual adaptation of technology and organization. Research Policy, pp. 251-267.

Lim, E., Ling Pan, S., and Tan, C.W. (2005). Managing user acceptance towards ERP systems – understanding the dissonance between user expectations and managerial policies. European Journal of Information Systems, 14, 135-149.

Lorenzo, O., Kawalek, P., and Wood-Harper, T. (2005). Embedding the Enterprise System into the Enterprise: A Model of Corporate Diffusion. Communications of the Association for Information Systems, 15, 609-641.

Lorenzo, O., and Kawalek, P. (2004). A Model of Enterprise Systems Infusion. In Proceedings of the European Operations Management Association (Euroma) Conference, INSEAD, France.

Mansfield, E. (1993). The Diffusion of Flexible Manufacturing Systems in Japan, Europe and the United States. Management Science, 39(2).

Markus, M., Axline, S., Petri, D, and Tanis, C. (2000). Learning from Adopters' Experiences with ERP, problems encountered and success achieved. Journal of Information Technology, 15, 245-265.

McAfee, A. (2006). Mastering the Three Worlds of Information Technology. Harvard Business Review 84(11), 141-150.

Miles, M., and Huberman, A. (1994). Qualitative Data Analysis. An Expanded Source Book. California, Sage Publications.

Mohrman, S., Tenkasi, R., and Mohrman A. (2003). The Role of Networks in Fundamental Organizational Change. A Grounded Analysis. The Journal Applied Behavioral Science 39(3), 301-323.

Montealegre, R. (2002). A Process Model of Capability Development: Lessons from the Electronic Commece Strategy at Bolsa de Valores de Guayaquil. Organization Science 13(5), 514-531.

Newell, S., Tansley, C., and Huang, J. (2004). Social Capital and Knowledge Integration in an ERP Project Team: The Importance of Bridging and Bonding. British Journal of Management, 15, 43-57.

Park, J., Suh, H., and Yang, H. (2007). Perceived Absorptive Capacity of Individual Users in Performance of ERP usage: The Case for Korean Firms. Information and Management, 44, 300-312.

Pettigrew, A. (1990). Longitudinal Field Research on Change. Theory and Practice. Organization Science 1(3), 267-292.

Rajagopal, P. (2002). An innovation-diffusion view of implementation of ERP systems and development of a research model. Information & Management, 40, 87-114.

Robey, D., Ross, J., and Boudreau, M. (2002). Learning to implement enterprise systems: an exploratory study of the dialectics of change. Journal of MIS, 19, 17-46.

Walsham, G. (1995). Interpretive case studies in IS research: nature and method. European Journal of information Systems 4 (2), 74-81.