8-6-2011

« Human agency », ERP and CRM: the roles of final users in the postimplementation phase

Wilfrid Azan
EM Strasbourg, azan@unistra.fr

Adel Beldi
IESEG School of Management Lille-Paris

« Human agency », ERP and CRM: the roles of final users in the post- implementation phase

Azan Wilfrid
EM Strasbourg

azan@unistra.fr

Beldi Adel
IESEG School of Management
Lille-Paris, LEM
a.beldi@ieseg.fr

Abstract

Many studies on information systems (IS) place greater emphasis on the concept of users than on structures to explain the impact of information technologies (IT) in organizations [Boudreau & Robey 2005, Cousins and Robey, 2005; Chu & Robey, 2008]. Human agency offers a theoretical framework for greater insights into the use of new technologies like Enterprise Resource Planning (ERP) or Customer Relationship Management (CRM) in relation to three temporal dimensions: the iterations of the past, future forecasts and the contingencies of the present. We apply this theory to two case studies. The first is an exploratory study that focuses on the implementation of a CRM tool in a large French telecommunications company, and the second is a confirmatory study of an ERP software system, following its introduction in a large state-owned organization in France (RTE). The findings from these two cases illustrate the value of the theory of human agency[1] to explain the way CRM and ERP use evolves. End users continued to work in the old way, deliberately choosing not to use these tools whenever possible, then improvised uses in response to urgent demands, and finally reinvented uses in accordance with their own interpretations of future needs, stages described by Boudreau and Robey as inertia and reinvention (2005).

Key words: human agency, ERP, inertia, reinventions, use

[1] The term 'human agency' indicates the capacity of human beings to make choices and to impose those choices on the world.

1. Introduction

The implementation of a new IT is of considerable social importance (Pollock and al., 2007). The users, those who use or are going to use IS could be customers, sales people, employees or even managers. 'Real knowledge workers', they spend time on communications and on the collaboration process, using and interpreting information. Apart from this characteristic, they intervene well before the implementation. For example, the specifications of the IS cannot be drawn up without one of them and a project group must include a project leader who is a user. The support of the user in the setting up of an information system (design and implementation) is considered to be absolutely essential. The success of the IT change would depend on the time and effort consecrated to it by its users.

It is in any case an element which is highlighted in theories such as that of the human agency. For Emirbayer & Mische (1998), this theory is based on a number of actions undertaken by individuals to change the roles, structures and procedures within an organization. Applied to technology, it contrasts with the view of an ordered relationship between theory and its situation. It concerns the reinvention of the usage of technology neither envisaged by designers nor by the researchers in their prior studies.

In this way, this article aims to show that the study of the users has become the main objective, technology only existing and being of interest when there is an interaction between the actors (Boudreau & Robey, 2005). End users 'enact' the IT and enhance their performances with their local knowledge. They are knowledgeable actors who use, spread and provide information corresponding to the environment that they have thus created and in which technology participates. End users can make use of technology or even adapt the usage of technology in an unexpected way in comparison to the original intentions of its designers (Robey and Boudreau, 1999).

Our objective is to show that the 'enactment' of the technology is shaped by personal factors linked to the end users and others that are contextual and social. These latter's are also taken account in shaping the end users' actions towards the scope of the human agency theory. We studied here, the cases of two state-owned companies that move beyond privatization adopting a new ERP (RTE) or CRM (FX). The changing organizations and the end users enacted simultaneously new technologies and the collective adoption patterns occurred meanwhile the individual one. To evidence the operational role of the end users we studied the pot implementation phase. In the post implementation phase, the production system is installed, initial user training is completed, user documentation is delivered, and the post

implementation review meeting is held. When this phase is completed, the application is in steady-state production. It is reviewed to ensure that the system met all of the goals in the project plan for a satisfactory result : the end users are given the word.

In the first part, the article will draw attention to the contributions of the human agency theory in understanding the different usages of IT by the users. In the second part, we will present two field studies concerned with the theory of human agency, as it is used in the context of the integrated systems (CRM and ERP) and we will discuss the results in a third part.

2. IT USERS AND THE HUMAN AGENCY

We will here examine the evolution linked to the role of the user in the literature and relating to this trend, the use of human agency theory.

2.1 *The structuration of IT*

The recent research into information systems (Orlikowski, 1992, DeSanctis & Poole 1994, Orlikowski, 2000; Orlikowski and Barley, 2001; Boudreau & Robey, 2005) is more focused on the human factor and less on the structures and the characteristics of the technology as a technical artefact for explaining the consequences of the implementation of IT. This viewpoint, centred round the individual, has been inspired by the human agency theory; it considers that actors are relatively free to 'enact' the IT in different ways. They can use it in a minimal way on an individual or collective level, or they can improvise other usages that result in new and unexpected consequences. This viewpoint is consequently opposed to treating IT as the only determining factor for change. It finds its basis also in the Giddens' structuration theory.

In fact, since the 1980's, research in social science founded on Giddens' structuration theory have inspired many management researchers in particular in the field of IT study. This theory indicates the type of role played by users in the interactions between IT and organizations. Different researchers have taken up this theory to study the interactions between technology and organizations. Thus, transposing Giddens' fundamental notion of duality to that of a duality of technology and the knowledgeable actor enabled Orlikowski (1992) to suggest a structurational model of technology. It is based on the recurring and dynamic relationship between (1) human agents, (2) technology –material artefacts mediating task execution in the workplace; and (3) institutional properties of organizations. Other authors (Barley, 1990), Orlikowski (1991;1992; 1996; 2000), Walsham and Han (1993), agree

with this current of research. This conception of the relationship between technology and organizations is directly opposed to the direction taken in former research imagining a one directional and static relationship between these two notions according to a positivist and determinist approach.

According to Orlikowski (2000), viewing the use of technology as a process of enactment enables a deeper understanding of the constitutive role of social practices in the ongoing use and change of technologies in the workplace. The Human Agency theory is complementary and can be used to situate every interaction between end user and IT in its spatio-temporal context, the variations in use of the same technology by different users can be linked to the actors' implication in the process of enactment in his daily work. According to this theory, the end user is considered as a singular actor which has his history, routines, personal aims and self projectivity. His 'enactment' with IT is affected at the same time by the social context, the individual users' patterns and the technical characteristics.

2.2. 'Human agency' and IT use

Emirbayer & Mische (1998), define human agency as a temporally embedded process of social engagement, informed by the past (in its habitual aspect), but also oriented toward the future (as a capacity to imagine alternative possibilities) and toward the present (as a capacity to contextualise past habits and future projects within the contingencies of the moment). To make relevant studies using this theory, we need to analytically distinguish the different constitutive elements of human agency: iteration, projectivity, and practical evaluation.

- The iterational element: would refer to the selective reactivation by actors of past patterns of thought and actions, as routinely incorporated in practical activity, thereby giving stability and order to social universes and helping to sustain identities, interactions, and institutions (p. 971).

- The projective element: projectivity encompasses the imaginative generation by actors of possible future trajectories of action, in which received structures of thought and action may be creatively reconfigured in relation to actors' hopes, fears, and desires for the future.

- The practical-evaluative element: it entails the capacity of actors to make practical and normative judgments among alternative possible trajectories of action, in response to the emerging demands, dilemmas, and ambiguities of presently evolving situations.

These are analytical distinctions; all three of these constitutive dimensions of human agency are to be found, in varying degrees, within any concrete empirical instance of action. In this sense, it is

possible to speak of a chordal agency triad within which all three dimensions resonate as separate but not always harmonious tones. Emirbayer & Mische (1998) also claim that, in any given case, one or another of these three aspects might well predominate. It is possible to speak of action that is more (or less) engaged with the past, more (or less) directed toward the future, and more (or less) responsive to the present.

In the context of technology use, the human agency aims to explain why different usages are possible for different users using the same technical artefacts in different times and places. This *human agency* theory, enables us to situate the interaction more precisely between the reproductive and transforming dimensions of the social action (Hays 1994), and to explain how the individual's reflexivity can evolve either towards a growing sense of routine with regard to the action or towards a continued questioning of the experience. Thus, we can better understand the origins of users' behaviour following the implementation and use of integrated IT.

In each action or situation, the users try to find a balance between past practices, future objectives and present contingency factors. According to the human agency, temporal, contextual and spatial dimensions combine to influence the users' actions. Together they form a dilemma for a practical evaluation by the user in the present. By situating the actor in the past and/or the future (the temporal dimension), the roles of the social actors (the contextual dimension) and the positioning of the actor (spatial dimension), we can explain the behavioural choice of the actors in terms of usage: appropriation according to the spirit of the technology, improvisation, reinvention or circumvention.

Each action or interaction between IT and the user can be analysed and situated according to these three dimensions. In the empirical part we will interpret the actual behaviour of each category of ERP/CRM user in the two different firms according to this analysis diagram.

In conclusion, the use of the human agency theory shows the increasing importance of users in the information systems research. The users have to manage numerous ongoing changes other than in technologies and according to the human agency; it is these users who will make it possible to adapt the IT to the internal environment. The role of users in ERP/CRM projects can be thought as an evolution from an acceptance of change to enactment through use!

The research reported in this paper responds to the issues identified above. We therefore chose to study the implementation and use of two ERP/CRM systems, which potentially represent a "hard" constraint within the human agency and are associated with organizational control. We studied patterns

of use of the system after the end of implementation process, hoping to learn about the reasons for different use observed by the end users in two case studies. We proceeded inductively with preconceived theoretical notions about human agency and a "practice lens" applied to IT use. Our research can be considered as a particular study, in which different organizational consequences result from the use of nearly identical technologies (CRM and ERP) in comparable settings (Robey & Boudreau, 1999).

CRM can be defined as all the technical tools designed to gather, handle and analyse information that is relevant to clients and prospects, with the aim of developing their loyalty by offering them a better service. In terms of computing applications, it concerns software packages which make it possible to have a direct contact with the client, whether it be on a sales, marketing or service level and which are often grouped together under the term 'front office' as opposed to the tools used in the 'back office'. Plakoyiannaki and Tzokas (2002) define the CRM as an approach based on technology which identifies, develops and integrates all the information connected with clients. It relies on the different skills within a company to create a value for the client. Thus this approach consists of three factors; the client-based strategy, the use of information and communication technology and the integration.

The two studies carried out, concerning the implementation of a CRM at FX and of an ERP at RTE were in the context of comparable changes. The two companies are very important in terms of size and turnover. They have had to adapt to a turbulent competitive environment because of the opening up to competition in their respective markets. In order to confront this new context, they chose to provide integrated ERP or CRM software solutions which would modify the routines already in place and the way in which employees work.

3. Field research

Using an interpretive approach (Klein & Myers 1999, Walsham 1993), we will concentrate our attention on the practices observed by users as well as their views expressed concerning ERP or CRM and their use in daily work.

3.1 Method

Our objective was to understand how end users interpreted and used integrated, ERP/CRM technology. As well as making assumptions on interpretive research, we focused on the subjective descriptions of users' practices and their expressed thoughts about the use of the software package in their work. In the beginning of the research, we did not specify a particular theory to guide our data

collection and analysis. Rather, as the data was collected and analyzed, relevant theories were investigated. Our research was similar to that of Barrett and Walsham's (1999), Boudreau and Robey's (2005) insofar as we entered the field with acknowledged difficulties linked to the practical difficulties of implementing and using ERP/CRM packages and a desire to understand the reasons for different uses and interpretations by multiple participants. As we progressed in the analysis, we consulted data and found relationships between the different concepts that provided insight into our empirical observations. As required in inductive approach, data collection was tightly interwoven with data analysis. Our theoretical sampling refers to a selection of incidents and informative data concerned with the basis of the concepts that have proven to be relevant to the emerging theoretical account. We made items analyses (Miles and Huberman, 1984) attempting to discover, analyse and qualify the phenomena observed.

The two organizations chosen for this study were a large telecommunications company in France (herein called FX; the actual name of the company has been disguised) and RTE[2] company, subsidiary of EDF[3] (Electricité de France).

3.2 Site selection criteria

In both cases, these companies were being privatised, were opening up to competition and thus were undergoing very important changes. The fact, that they were becoming equipped with ERP or CRM, was a sign of management autonomy. Companies do not begin from nothing but already use software packages that are often specific but which are designed for a perimeter which is much larger than the one that they have to manage up until then. The users are faced with management or sales software which are new and which oblige them to respect the constraints of the market and the shareholders. Therefore the users must obtain new tools and create a company where the profession remains the same. In the two cases, the users were in a position of post-implementation and worked between the past, present and the future.

Our first case study concerns FX and more particularly the division dealing with the 'business' customers in France and which manages 29 commercial agencies. The group is structured in divisions, we were particularly concerned with the distribution division (or commercial) responsible for selling the

2Réseau de transport d'électricité: the firm in charge of electricity transport and infrastructure.

3 State French company and European leader for the production and distribution of electricity

group products and services to small and medium sized companies' and also to large firms. In our study, the functions concerned by the implementation of CRM software are the sales and customer support and services departments. The total number of end users of this CRM is about 10,000 people. The aim of the project launched in 2001 is to replace the legacy system used by the front office actors (sales representatives, customer services) in the commercial agencies, at a local level, by a software package created by an external editor. By launching this project, the management aimed to find a solution to a considerable loss of their market share and a reduction in the profitability of telephone and Internet business.

Our second case study was about RTE ERP project, it was done after the deployment of the GCP project (Management, control, Balanced Scorecard, Purchase functions) which had the objective of implementing the management control modules, the Activity Based Costing4, the project management, the technical verifications and the accounting/purchasing/stocks of SAP integrated management software packages within the RTE. Moreover, the GCP project was launched at the same time as the quality standards ISO 9001. The missions of RTE are to guarantee the development of electrical energy in real time, that is to say, to adjust the balance between the offer and the demand for energy supplies in real time, to develop and optimize the functioning of the network, to handle the maintenance of the electrical network and to calculate the electrical consumption and invoices for all the clients.

3.3. Data collection

Several sources of data were used to make the two case studies such as interviews, archives, documentation and direct observation. For the first case study5 (FX), along with the transcripts of the semi directive interviews carried out, we have added summary notes of documents (around 300 pages), that included the notes of management committee and project teams meetings, journals and company information bulletins (internal journals), orientation documents, letters and notes, presentations in institutional meetings.

4 Module for setting up an ABC cost systems (activity based costing)

5 The data were collected primarily through interviews. We have made a total of eight interviews. The length of each one varied from one and a half to three hours. The information from the interviews is supplemented by internal documents and presentations from the group project, Intranet and the newsletter distributed in the firm reviewing CRM project. The main topics of data are centred in the (inter) reactions, uses of CRM process by end users and mainly salesman and customers' services people.

	Number of interviews	***Documentary Analysis***
1st case study (FX)	*8 (one with the project Director, one with the director of 'customers' claims and services process', three with the change' manager, one with the director of 'sales process', one with marketing director, one with the Human Resource director in charge of the project*	*Yes*
2nd case study (RTE)	*15 (5 with operationals, 3 with the controller 2, 5 with the assistant controller;, 1 member of the project team, 1 with the project manager)*	*Yes*

4. RESULTS

In this part, each case description is presented separately.

4.1 THE USE OF CRM BY THE « FRONT OFFICE » ACTORS AT FX

Our prior knowledge of the organization and his activity helped us to better understand the internal context and the main characteristics of its structure and management. The researchers had a relatively high degree of personal sensitivity (i.e. existing knowledge arising from personal experience) relating to each case study site chosen. This sensitivity would be an advantage for familiarisation with the particular culture of the two cases studies.

Through this case, we were able to explain the daily actions of these two categories of actors by using the '*human agency*' theory relating to three factors: time, space and the user context.

The people concerned by the modules deployed first in FX were 'Customer Support and Services' department (CSSD) and 'sales' department. The CSSD at FX was involved in providing technical consultations via the telephone and e-mails to clients, resolving customers' complaints, and providing technical support to other FX employees and particularly the sales force. The technical consultations provided by customer support specialists were complex activities, involving several actors within the firm and included finding the relevant reference material, consulting product specifications, seeking solutions and soliciting help in the agency and outside (other functional and central departments and subsidiaries of the company were offering different products and services in mobile telecommunications and internet). In the two agencies, the CSSD employed thirty specialists, managed

by a director and two managers. The sales department employed in twenty representatives and four sales assistants in each agency; it was managed by a director.

In this section, we will respectively describe the reactions and patterns of use of 'Customer support and services' and that of the sales staff.

- **« Customer support and services » department**

Solving complaints is one of the main activities of these employees in direct contact with clients. A claim module is organized around the "claim form" in which the actors store all useful data: the origin of the claim, description of the problem, past incidents etc. The CRM software proposes a first level for viewing client through a "customer synthesis" composed of two main elements: a "customer form" which contained general and commercial information about the customer, address, list of firm's actors in relation with this client and a "vision through 360°".

The manager responsible for the process of resolving claims in France defined it as all the tasks undertaken at the request of the client who has a problem or a grievance. The procedure starts from the moment the client makes contact with the person concerned in the company to explain his problem or his dissatisfaction, up to the moment when he receives a final solution to his problem. He deals with all the products offered by the company whether they are standard or complex.

It was noted that the CRM tool was favourably welcomed and widely used as soon as it was in service. The move from the old applications to the new tool was well accepted. New ways of working were implemented using the approach procedure of workflow systems integrated into the tool.

"With the CRM tool, several actors can be involved in resolving a claim and can transfer it to an expert in the field, who needs to find a solution for the client, possibly with the help of other people within the agency or elsewhere". The CRM application enables tasks to be followed up automatically, it is a tool for sharing information in real time which enables an easier collaboration between end users" remarked the "Customer support and services" department's manager.

*"We have noticed a change in the way in which these actors work when they are in contact with clients. An actor no longer needs to obtain information from other colleagues, (for help or claim), everything is available in the tool" (*confirms the same manager*).*

"Communication between people involved in the 'support customer' procedure has changed. Less time is spent waiting for an answer from a colleague about a particular problem, it is much better to obtain the information directly from the tool", points out the change management director.

The CSSD manager considers that a transversal and horizontal approach was necessary to facilitate the use of these tools for all the users concerned with the 'resolving complains' procedure. This new way of working was rapidly taken up by those involved in it. Very little opposition had been observed, enabling a usage that took into account the new functions of the tool, whilst creating a greater efficiency for the user. Thus, a minimum of opposition and inertia was observed throughout the implementation of the new artefact.

With regard to the 'space' factor of the action, we note that the use made by the CSSD employees takes place in the internal space of the agency. These users do not visit clients but have the role of receiving contacts and resolving problems in a short time. This usage within a fixed space (the office) facilitates familiarity with the tool and communication between the different actors. CRM functions are mainly used by the personnel of the CSSD for a future and projected evaluation of the improvements necessary in order to work efficiency and consequently, the increased customer satisfaction that could be procured by its effective use. The use is made in a collective context in which the tasks can only be carried out through working together, sharing information in real time, and by increased cooperation between the different actors in the 'resolution complaints' procedure.

- Sales department

The 'Sales' module is composed of two main compounds a 'transaction form' and an 'activity form'; the first enables a sales person to join together all actors who he thinks may be useful to accomplish the transaction, he constitutes a sort of 'transaction team'. The second form facilitates the visioning of tasks in advance and alerts actors if delays have been not respected.

The sales force's method of working did not change following the implementation of the new module for commercial activities. A rejection and a half-hearted use was noted, the sales people continued to use their old tools (Excel, whereas the tool proposes automatic functions for following up agendas and estimating sales offers). Thus a HR[6] manager affirmed, "There *is a need to have a change in mentality, a sales representative is essentially an individualist, the tool is completely transversal,*

6 Human Resources

anyone can be connected to the application in the agency, knows the latest data concerning the client (following up visits to clients etc) and have access to the information". In this sense, *sales representatives made the following remark "Why enter information which will be used by everyone?"* Retaining information about clients is considered to be important in order that each of the sales representatives can reach his or her commercial objectives. Sales people have doubts about the value of CRM software for their own and the firm's performance. Some of these sales people based their scepticism on the view that making transactions with business customers necessitates personal relationships and individual treatment and not sharing information with others. Other sales representatives were sceptical about technologies in general and viewed the time to learn about how the CRM functions as being too long to be effective. The scepticism felt by these sales people was exacerbated by their limited knowledge of the tool. The training sessions about CRM dealt with the mechanics of using the software and were technical and abstract. Little was shown of how CRM software could be used in selling. Most sales representatives are convinced that making sales is a personal capability and that the CRM is unhelpful. It only enables managers to check on sales people's daily work.

The use of the CRM tool, by providing all the necessary data at the commercial level (client contacts, visits, results of appointments etc) would make it easier for superiors in the hierarchy (sales director) to monitor the quality of the work carried out. What is more, the sales representatives do not wish to key commercial data about their customer into the CRM data bank. They consider that this task is the job of a sales assistant. For all sales representatives, there was an expectation that most, if not all hours, should be 'oriented' to making sales and to be effective in a short time. Because many sales representatives did not see using CRM software as an activity that could improve their sales processes and results, they were unwilling to spend time in storing data and using it, as they would have to give up some of their personal time. Thus, the CRM software was poor in commercial data about customers, resulting in turn that it was little used by sales representatives.

Despite training, communication and managers' involvement in order to facilitate CRM software appropriation and its effective use, sales representatives remained unwilling and unmotivated to spend much time using the technology. They mainly accessed the CRM at the end of the month to key in the turnover achieved, which is the basis for calculating the variable part of their salary.

4.2 The use of ERP at RTE

RTE no longer uses the 'owner software' which was widely used before. The changes were viewed in different ways and the projective dimension prevails among the leading group. According to the project manager of GCP, Pierre, the two prevalent new objectives for the implementation of an ERP are transparent reporting and a business autonomy from the "big brother" EDF. « The new software enables us to be independent from the head office and to prepare our profit and loss account and our balance sheet. It is important for us to look like a real large firm". The administrative system must be integrated in the ERP system. On the contrary some part of the information system, for example the component data base, must be administrated in a separate system.

Pierre explained: "Each RTE county must have its own functions and core competences within the group in order to be near the customer. The RTE Far East has to face new tasks such as the reporting of data for the management of the new centre. The RTE regional management gathers together all the functions and concentrates on the activity of building electric lines and repairing them. This is a big break from a long tradition of centralism.

In this case, the learning process is defined as an implementation without preliminary structure, plan or method and is one of the processes at work in the theory of human choice. For Boudreau & Robey (2005), the development of the technology by usage is simply that of progressing from inertia to reinvention and is based on the cases cited by the two authors for the two groups (see below). The originality of the EDF project is the attention that was given to the users and the dividing up of the groups into very small and very different segments reduced the possibilities for reinvention by standardising behaviour within the groups of users. Methods were used in training that aimed at preventing all types of reinvention. Thus, the project culture in RTE made it possible to find answers in order to limit inertia. "Yes, I really felt that I was being assisted particularly thanks to the good organisation of the project and the good way it was carried through" According to the figures supplied, 93% of users were trained, at the latest three months after the switch from the old system to the new one.

- 7 years after the implementation

The reinvention of the technology was taken into account by the hierarchy seven years after the beginning of the project. In fact, this was the case in RTE in 2005, RTE 's group decided to discuss the different ERP reinventions between the RTE counties. During this period certain people from every county gave their point of view about the way it should be done and proposed reinventions in practical

terms. In 2006, the best methods were circulated and tested. They became compulsory in 2007. For example, Pierre explained that in accounting they were important discussions on the interpretation of complex events. The 'actions against third parties': In this kind of event, the administrative managers had to be very creative and create consistent interpretation rules over the years. The event corresponds to actions against car drivers that damaged electric installations during an accident, for example, electric pylons. The amount paid by the car insurance is sometimes including in investments, sometimes in services, or sometimes 50% in each. During the meeting organized by RTE, it was decided to include it in investments. The accounting end users noticed that sometimes their work was simplified and sometimes it was made more complex. From the beginning of 2007, the practices could be included in the form of a model and each deviation could be listed. Pierre explained that a total could be made of the number of deviations and that the system had calculated a linear regression.

5. Discussion

In this discussion we propose a human agency perspective in the 'enactment' of integrated technologies. This perspective is particularly adapted to explaining the difference in the way of acting of functional end users and that of operational end users.

5.1. FX Case study

- *'Enactment' of CRM in CSSD*

Due to the complexity involved in information systems, only the 'router'[7] can trace the process and know exactly the evolution phase of the claim. This element causes difficulties in following, resolving the problem and controlling the quality of the solution if this person is absent or overloaded. The new CRM software maintains that many actors could store a claim and follow the resolution process. With the claim module, users can store complaints directly in the machine and do not write the information on paper many times. Consequently, the team gains time in resolving claims, and stores all the data concerning this with no risk of loss. The impact of the use of the customer's claim module is therefore: better tracking of claims, good reactivity fulfilling customer expectations in a short time. Moreover, workflow technology provides access to data in real time by all the users authorized to follow the claim.

7 The person who transfers claim to one or many expert (s), who are able to resolve the problem and offer solutions to the customer in the short term time.

With regard to the chordal human agency triad of CRM use by end users in CSSD, it is more dominated by a practical evaluation of the benefits observed in using the new tools and a positive projectivity in the future in relation to an effective use of CRM functionalities. According to users in the CSSD, the new tool was better than the past one. For example, the end user could see if the customer had an offer with the firm at that moment or not, which made a different to the resolution of the claim. In accordance with the projectivity in the future, users in CSSD, after their adoption of the claim process, wondered about the future evolution of the software and the possible interconnections with other processes like sales, after sale service, web contact, direct marketing etc. This interconnection is essential to an effective and global CRM approach.

- *'Enactment' of CRM by sales representatives*

Some sales representatives wondered why *"we have to use a new tool? Existing software and paper are sufficient"*. Another factor is linked to the sales representatives' culture "*why we have to enter data that will be used by others? What's the benefit for us to do this added work when achieving our business goals*", retention of information is judged to be important in the sales representatives work.

Entering data in the software will facilitate the hierarchical control of the quality work. Other factors are mainly attached to the absence of financial bonuses while using the tool. For many sales representatives "using the tool is an added workload without financial compensation". This IT 'enactment' is dominated by a limited practical evaluation. In fact, constraints on sales representatives to realize business goals in a highly competitive market did not allow them to spend much time on the appropriation of the CRM functionalities. It may be more judicious to fix less ambitious goals for sales representatives in the post implementation CRM period, enabling them to use the tool.

Taken together, these empirical illustrations show that people react differently to the same technologies in different contexts and according to the methods used.. We have seen that they do so in response to their personal interpretation of the value of using the technology in their daily work. Every actor, by using a technology in a particular manner, situated his action in a temporal perspective. In the context of use, his action may be dominated by past routines, causing no change and inertia, or practical evaluation of the present involving improvisation, or future projectivity inducing change by the use of the technology as has been designed by developers to improve daily working.

Thus, in the case of FX we see that unlike the sales people, the members of the "customer support and services" department were more convinced of the CRM approach and used the tool in their

daily work. The CSSD has a co-operative, team–oriented culture which are typical characteristics of a network organization (see Brynjolfsson et al., 1997).

The culture of working in a group, to resolve claims or find solutions to client's requests, facilitated an understanding of the advantages of the tool in terms of sharing information, distribution of the data in real time and a total visibility of all the 'claims' resolution' process.

The CRM, associating the commercial functions and client services, crystallises the differences that are difficult to overcome between departments as well as the ways of acting within different temporal, spatial and contextual spaces. The human agency theory sheds a relevant light on the individual motivations of each end user in his daily usage of the CRM tools functions.

Through the analysis of the interviews and the internal documents, we were able to conclude that there were two different types of 'enactment' and use of the CRM tools whether it be in the 'sales' or the 'customer support and services' departments. These opposite reactions can be largely explained by cultural, human and coordination differences between these two categories of CRM users.

The 'human agency' theory appears to provide relevant elements enabling an understanding and a way of explaining this reality in the field. The table below shows the differences between the different ways in which CRM is used by the two categories of end users from – "Customer support and services" and "Sales" Departments.

Table 1- Differences in the usage of the CRM between the two categories of end users

	CSSD	**Sales people**
The way CRM is used	- Usage conforming to the spirit of the tool, - Positive Reinvention	- Circumvention - Avoidance
Factors explaining the types of use	Working in group culture	Working individual culture
The space of the action	Internal	External
Time of the action	Dominated by a projective evaluation of the future advantages for the client in terms of quality and rapid service	Dominated by iteration, the fear of change and sharing information with other sales representatives
Context of the action	Collaborative work Collective Objectives	Individual work, individualist culture Personal objectives

5.2. RTE case study

In the case of the RTE, the three items distinguished by Emirbayer and Mische (1998) in the theory of human agency appeared with varying importance several years after the implementation of the project and the stabilising of its use.

Iteration type elements: According to past elements, the employees determine and programme their behaviour, sometimes relating to their acquired habits. In the case of RTE, the reference when evoking ERP remains the initial organisation. Thus, one user declared "In the past, the existence of different tools meant that we had to correctly use the necessary interfaces (for example for checking anomalies). The adopting of a single application removed this connecting work" The adoption of the module was largely facilitated by the situation existing locally at the time.

Projective type elements: The end users make their own predictions and try to calculate what their future behaviour will be. This element is not necessarily the most flagrant; in fact we intervened in the post implementation phase. Nevertheless, the use of a system based on former experience appears to us to be a good illustration. It concerns capitalising on the know-how acquired during the implementation through the use of this tool. It thus avoids all loss of information and ensures a transfer direct between the project teams and the transversal functions of RTE. Through the REX tool (based on experience) actions models can be circulated once the project team is disbanded. It provides propositions for an ideal organisation.

The elements of a practical evaluation type: They provide the possibility of making decisions within the context of emerging requirements and dilemmas of ambiguity. Thus, the management required the switch from the old system to the new one to be undertaken in the middle of an accounting procedure. The arbitration which was necessary demonstrated the conflict between the local rationalities of the different actors. It made them use the new system and at the same time ensured continuity in the accounting. At the beginning of the project, there were so many types of changes to be made that the practical evaluation was mainly aided by the integration advisors. After the implementation, the practical learning period there had already taken place. An end user stated "At the beginning the very 'macro' orientation of the SAP tool perturbed me a little and the lack of detail was very irritating as well as the rigidity of the management objectives but we found the right answer".

In the case of the RTE, the theory of human agency seems to provide an interesting explanatory framework: the richness of individual interactions and roles goes largely beyond the guidelines for

change proposed by the consultancy companies. The ways of usage largely exceed the simple framework of the technology in place. As one of the members of the project team explains, "The information system was reorganised at the same time as the structural changes were made and the RTE was created". In the case of the RTE, the user greatly contributed to the development of this technology. At the same time, his action contributed to its usage through a triple means of analysis: the past versus the projects, the collective ways of change versus individual ones and internal versus external.

The dominant cultures in companies founded on functional specialisations seem to be directly opposed to the new working practices based on integration through procedures that are transmitted by the ERP and CRM tools. As opposed to a determinist course of action between technology and organisation, a view based on the central role of the individual and the advantages of the human agency theory seems to provide a more relevant explanation to the equivocal results obtained after the implementation in companies of the same integrated IT.

5.3 Study implications

In this part we investigate the role of human agency theory in shaping the individual enactment of an integrated software based technology.

- **Human agency and a better engineering of integrated technologies**

The focus on the human agency allows an examination of the extent to which end users follow designer's intention for an information technology. End users spend a lot of hours in front of their screen and the fact of taking this into account enabled a better adoption of integrated technologies. Many editors draw on the projective capacities of users with many video clips, but the other abilities remain underexploited.

- **End-users and dimensions of analysis of the two cases**

Table 2 – Dimensions of the two cases

	FX case study		**RTE Case Study**	
Affiliation (Lamb & Kling, 2003)	**"Customer support and services" people**	**Sales people**	**Operational users "core competence" end users**	**Accounting, controlling and tax people**
Enactment space	Internal in the office	External	Colocated Among professional groups	Geographically distributed

Type of enactment of integrated technology	Collective appropriation and effective use	Inertia and non use	Collective improvisation and then reinvention	Individual improvisation, , participation (Hartwick and Barki, 1994) and then reinvention
Explanatory factors for the types of enactment	Collective and collaborative culture, necessity to share information	Individual culture, perceptions of the CRM usefulness	The culture of working in open teams.	The culture of individual work in particular
Action space and boundaries	Cross functional, work by process, need to integrate many actors in the process	Individual process, specific relationships with customers	Service, projects and community of users (Levina & Vaast, 2005)	A Business unit, Internal
Importance of the past	Weak	Important	Weak. The past is a source of learning and enables the training of integration advisors	Important
Action time	Dominated by a projective evaluation of future advantages confirmed by actual benefits	Dominated by past routines and iterations	Dominated by a projective evaluation of future advantages	Dominated by iterations and practical evaluations.
Source of the action	Collective, advantages to customers	Individual objectives, realize the transaction	Technical expertise	Hierarchy

5. CONCLUSION

Our research can be considered as a particular study, in which different organizational consequences result from the use of nearly identical technologies (CRM and ERP) in comparable settings (Robey and Boudreau, 1999). An approach entirely centred on technology probably has no sense when studying the interactions between IT and end users. Paradoxically, the end user has only recently become the main object of the studies carried out. Nevertheless, this latter, particularly in the case of tools with a large overall function such as the ERP and the CRM is an important consideration for the types of change associated with IT. From this point of view, the *« human agency »* theory is interesting in that it enables the user to become involved in the very complex change issues. The rhetoric often mentioned in practice, that ITs are indispensable factors for transforming organizations, does not seem sufficient to encourage planned changes within a company. Despite the potential of IT in organizational changes, the end users, by their practical use from sub-usage to reinvention, play a key role in the success of the implementation of ERP. The ERP system is considered to be rigid once installed and configured (Kallinikos 2004; Robey et al. 2002). The results of our research show the role played by the end users and the human agency theory in the use of technology.

Thus, the ERPs or the CRMs, far from standardising behaviour and practices, by the fact that they are 'organizational technologies', always leave the users a large scope and the fields of

investigation continue to be enormous. The literature supports a positive relationship between attitudes and the degree of technology use (Ajzen and Fishbein 198, Davis 1989). Theories of enactment and human agency are sensitive to the possibility of attitudinal ambivalence rather than looking for uniformly positive or negative attitudes (Boudreau and Robey, 2005). Our research results demonstrate the relevance and the complementarities of these two theories in explaining end users' attitudes and use of integrated technologies. It seems more relevant to consider the IT as an ingredient in a complex process of social and organizational change, in which the forces of transformation are often held back by resistance and inertia. By focalising on the user and the usage of IT in different organisational contexts and in varied individual groups, the two case studies demonstrate the dynamic and irregular nature in the implementation of technology. Several interactions with IT are possible and not determined in advance, going from resistance, uniform usage, reinvention or circumvention. Our research shows the difficulty in planning the issues involved in the installation of a new ERP or CRM technologies. The changes are made over a period of time and through usage within the end user's own spatiotemporal context. In this way, the actions accompanying the change such as training or communication must continue even after the ERP implementation phase. In fact, the users seem to 'enact' the software package applications in an unpredictable and uncontrollable way.

Future research will be able to establish the link between the attitudes of users and the human agency theory. It's necessary to investigate different contexts where ERP or CRM technologies have been introduced. While the two companies studied here are similar in environment, structure and culture, they differed significantly in strategy and size. They still only represent two organizational types. More organizations need to be examined to see whether the proposed concepts taken from human agency are relevant in other situation. In this way, the analytic generalizations- that other end-users experience with ERP/CRM technologies that resemble the patterns detailed above- will be tested and elaborated.

References

Ajzen, I., M., Fishbein 1980. *Understanding Attitudes and Predecting Social Behavior*. Prentice-Hall, Englewood Cliffs, N.J.

Barrett, M. and Walsham, G. 1999. Electronic trading and work transformation in the London Insurance Market. *Information Systems Research*, 10(1) 1-22

Barley, S.R. 1990. The alignment of technology and structure through roles and networks, *Administrative Science Quarterly*, 35, 61-103.

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

Broadbent, M. Weill, P. 1997. Management by maxim: how business and IT managers can create IT infrastructures. *Sloan Management Review* Spring.

Brynjolfsson, E., A.A Renshaw, M. Van Alstyne. 1997. The matrix of change, *Sloan Management Review*. 38 (2) 37-54.

Callon, M. 1991.Techno-Economic Networks and Irreversibility in *A Sociology of Monsters: Essays on Power, Technology and Domination*, J. Law (ed.) Routledge, London 132-161.

Ciborra, C.U. 1992. From thinking to tinkering: the grassroots of strategic information systems. The information society (8) 297-309.

Ciborra, C.U., O. Hanseth. 1998. From tool to Gestell Agendas for managing the information infrastructure, *Information Technology & People*. West Linn. 11(4), 305.

Ciborra, C. U. and associates (2000), From Control to Drifts, The Dynamics of corporate Information Infrastructures, Oxford University Press.

Davis, F. D. 1999. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319-340.

DeSanctis, G., M.S. Poole. 1994. Capturing the complexity in advanced technology use: Adaptive Structuration Theory. *Organization Science*, 5(2). 121-147.

Emirbayer M., A. Mische. 1998. What is agency? *American Journal of Sociology* 103(4) 962-1023.

Giddens, A. 1984. The C*onstitution of Society: Outline of the Theory of Structure.* University of California Press. Berkeley, CA.

Hanseth, O., E. Jaccuci . M. Grisiot , M. Aanestad. 2006. Reflexive standardisation: side effects and complexity in standard making, *MIS Quarterly 30* 563-581.

Hartwick, J., H. Barki, 2001. Explaining the Role of user Participation in Information System Use. *Management Science, 40(*4) 440-465.

Hays S. 1994. Structure and Agency and the Sticky Problem of Culture. *Sociological Theory*. 10 214-230.

Kallinkos, J. 2004. Deconstructing information packages: Organizational and behavioural implications of ERP systems. *Information Technology & People* 17 8-30.

Klein H.K., M.D. Myers 1999. A Set Of Principles For Conducting And Evaluating Interpretive Field Studies In Information Systems. *MIS Quarterly* 23 (1)67-94.

Markus L., D. Robey 1988. Information technology and organizational change: causal structure in theory and research, *Management Science*. 34 (5) 583-598.

Levina, N. & E., Vaast 2005. The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems. MISQ 29 (2) 335-362.

Lamb R. Kling R. 2003. Reconceptualizing Users as Social Actors in Information Systems Research, MISQ, 27 (2) 197-235.

Miles, M.B., and A.M. Huberman, 1984. *Qualitative Data Analysis: A Sourcebook of New Methods*. Sage Publications. Newbury Park, CA.

Orlikowski, W., D. Robey 1991. IT and the structuring of organizations, *Information Systems Research*, 2 143-169.

Orlikowski, W. J. 1992. The Duality of Technology: Rethinking the Concept of the Technology in Organizations. *Organization Science*. 3(3) 398- 427.

Orlikowski, W.J. 1996. Improvising organizational transformation over time: A situated change perspective. *Information Systems Research* 7 63-92.

Orlikowski W.J. 2000. Using technology and constituting structures: a practice lens for studying technology in organizations». *Organization Science* 11 (4) 404-428.

Orlikowski, W.J., S.R. Barley. 2001. Technology and institutions: What can research on information technology and research on organizations learn from each other? *MIS Quarterly*. 25 145-165.

Orlikowski, W.J., C.S., Iacono. 2001. Research commentary: Desperately seeking the " IT" in IT research- A call to theorizing the IT artefact, *Information Systems Research*, 12(2) 121-134.

Plakoyiannaki, E., N., Tzokas 2002, Customer Relationship Management: A capabilities portfolio perspective. *Journal of Database Marketing*. 9 (3) 228-237.

Pollock, N., R. Williams, L. D'Adderio. 2007. Production of Organizational Software Packages Global Software and its Provenance: Generification Work in the Production of Organizational Software Packages. *Social Studies of Science.* 37 (2) 254-280.

Robey D., M.C. Boudreau. 1999. Accounting for the contradictory organizational consequences of information technology: Theoretical directions and methodological implications. *Information Systems Research.* 10 167-185.

Robey, D., J.W. Ross., M.C. Boudreau 2002. Learning to implement enterprise systems: An exploratory study of the dialectics of change. *Journal of Management Information Systems.* 19 17-46.

Walsham, G. 1993. *Interpreting Information Systems in Organizations*. John Willey, New York.

Walsham, G. and Han, C.K. 1993. Information systems strategy formation and implementation: the case of a central government agency. *Accounting, Management and Information Technologies*. 3(3) 191-209.

Yin, R.L. 1994. *Case Study Research, Design and Methods*, Second Edition, Sage Publications, Applied Social Research Methods Series.

Appendix 1 - Basic characteristics of the CRM and ERP projects studied

Case	A (FX)	B (RTE)
Project launched	2001	1999
ERP	People Soft	SAP
Motivation	Competition, customer problems, decline in turnover, low performance	Competition, regulation problem, better productivity
Explicit objectives	Move the firm from "product" approach to "customer" approach Get global, single and shared "customer vision" Improve customer satisfaction Reduce administrative costs Improve effectiveness and reactivity	Be a global actor in the opening up of the European electricity market Improve managerial and decision autonomy Reduce administrative costs Improve effectiveness and reactivity of an ancient state owned enterprise
Main modules (so far)	Customer support and services, sales management	Controlling, BSC, ABC, Budgeting, purchase management, project management