Beyond people and tools, what is the place for the organization in the analysis of ICT uses?

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Abstract. The IS literature allows to identify the role played by the characteristics of the people and the characteristics of the tools in the uses if an ICT tool. However, these papers have in common to develop a very narrow analysis of them. They have difficulties to take into account the organization as a whole. Numerous papers ask for a greater consideration of the organization into the analysis of the uses of an ICT tool. In this paper, we suggest to enrich this reflection by paying attention to researches produced in the field of the sociology of organizations. To show the potential of this literature, we present a case study of a Small and Medium Enterprise that uses a software supposed to improve collective decisions. The results produced by this case study allow to validate the relevance of the framework which develop a localized analysis of uses but they also show that it is interesting to interpret those uses from a more global view, especially with regard to the strategic challenges of this firm. This framework allows us to propose a discussion which draws perspectives of research to progress towards a better consideration of the organization in the analysis of the uses of ICT.

Keywords: ICT uses, tools, organization, appropriation.

1   Introduction

In the ICT uses field of research, the concept of enactment of the technology [30] constitutes a particularly crucial contribution. This concept allows to report how people intervene in their uses of an ICT. In the same way, De Sanctis & Poole [10] allows a precise analysis of the role of the characteristics of technology in uses. The concepts of "structural features" of the technology and the "spirit of the technology" constitute solid support points on which it is possible to analyse "appropriation moves" of a technology [10: 133].

Those researches produced stimulating frameworks for the analysis of ICT uses. However they have in common to background the question of the organization. Nowadays, different papers in the IS literature underline that the nature of the organization plays a major role in the nature of the ICT uses. Therefore, they point the need to reintroduce the organizational dimension in this reflection. After presenting them, we will suggest completing them by reusing the researches that, from 60s to 80s, especially in Europe, analyse the link between the organization and the technology. These will allow us to propose a real enrichment of the reflection on the ICT uses.

To report concretely the potential of this reflection, we will present the case of a firm that implements a software supposed to improve collective decisions. The analysis of the uses of this tool shows that they are linked to the characteristics of the users, to the characteristics of the tool but also to the characteristics of the organization in which all these phenomena take place.

We will end this paper with a discussion that draws perspectives of research articulating these three dimensions of the people, the tool and the organization in the analysis of ICT uses.

2 Literature review

Although they are very different, works of Orlikowski [30] and De Sanctis & Poole [10] can be considered as two majors outcomes in the reflection on the ICT uses. Each on their theme, they propose a powerful framework of analysis which succeeds in reporting exactly phenomena which they study. Having presented them, we will show however that they have in common not to grant a great place for the role that organization plays in the definition of the ICT uses. We will present recent papers in IS and oldest papers in sociology of organizations to show what the wider consideration of the organization can bring in this reflection.

2.1 Orlikowski [30] analyses in detail the role of people in the ICT uses

In the literature, the role that uses and socials structures play in uses of an Information Technology (IT) has been identified as a important theme of research.

The theory of practice is considered as the actual most efficient framework to analyse this reinvention that users do when they use IT solutions [30]. Orlikowski [30] propose the term of "enactment" (that she takes from Weick [53]) to designate the real use that actors make of a specific technology. Orlikowski argues that "while a technology can be seen to embody particular symbol and material properties, it does not embody structures because those are only instantiated in practice" [30: 406]. In other words, Orlikowski considers that technology has no concrete material structural characteristics. It does not pre-exist to the practice. Each user enacts rules and resources that composed technology each time he uses it in recurrent practice. Instead of analysing how the structures presumed to be embedded within technology "are used, misused, or not used by actors in various contexts", the theory of practice proposes to frame what actors do with the technology, how they enact it [30: 407]. Technology structures are thus not "external" to humans, simply "waiting" to be appropriated, they emerge from the actors' situated interaction with an IT. These enacted structures are labelled "technology-in-practice".

In this way, the actors' use of technology becomes structured by their experiences, knowledge, meanings, habits, power relationships, and norms. Such structuring enacts future use as actors continue to interact with the system.

In coherence with this perspective, Orlikowski [30] argues that technology can never really be considered as "stabilized" because technology-in-practice is always subject to change as humans modify their awareness, experiences, knowledge, power, etc. It is proposed that even though technology-in-practice may become institutionalised over time, this is only stabilisation "for now" [44]. In every use, there is always the possibility of enacting new structures. Therefore, the practice lens suggests an "open-ended set of emergent structures that may be enacted through recurrent use of technology" [30: 412].

Theory of practice [30] is a powerful framework because it really underlines and explains the role that users play in the uses of the technologies. But, if the users' role is taken into account, the role of the characteristics of the technology appears quite absent [12]. In fact, this theory of practice does not link enactment with any kind of characteristic of the technology that is used. The place of users is so important that appropriations become too close to uses [29]. Therefore, literature claims for a reintroduction of the characteristics of the technology in the analysis of uses.

2.2   De Sanctis & Poole [10]: technology and appropriation that tool characteristics play in the ICT uses

De Sanctis and Poole re-introduce technology in the study of technology uses and social structuration. They proposed the Adaptive Structuration Theory (AST) that is currently considered as the most powerful framework to explain how characteristics of the technology play a role in uses [24].

The central thesis of this conceptualisation is that social structures inscribed in the technologies are produced and reproduced by individual members of a group, by using and adapting rules and resources through the interactions.

Initially, AST was developed to study groups using electronic group decision support systems (GDSS): "it looks into the processes of human usage of computer systems and at the nature of group-computer interaction" [10: 150]. AST suggests that social structures serve as guides for planning and accomplishing tasks: designers incorporate such structures into the technology, with the result that the structures may be modified or reproduced [19]. De Sanctis & Poole [10] propose that the social structures provided by technology can be described in two ways:

 – *The structural features of the technology* (examples of the structural features of GDSS were identified such as the voting algorithms and anonymous recording of ideas that brought meaning and control); they are classified by the type of rules, resources, or opportunities for use that the technology offers to the user;

 – the *spirit of the technology*, which is understood as the general intention of the system with regard to values and goals underlying a given set of structural features that provide a normative framework, suggesting appropriate behaviour, possibly participating in the trial of domination. When technology is new, its "spirit" is defined. Designers determine how the technology should be used, but the adoption of this technology shapes its spirit further. Over time, the spirit of the technology is less open to interpretations and becomes rigid when the technology is stable and used routinly.

Those two concepts permit to analyse four elements that characterize the way users use a given technology :

 - appropriation moves (the ways that users choose to appropriate the available structures of technology);

- faithfulness of appropriation (the extent to which a certain technology is appropriated in line with its spirit);

- attitudes towards appropriation (the users' assessments of the extent to which the structures within the system are useful and easy to use);

- instrumental uses (reasons why the system is used) [42: 57].

With this framework, we clearly see how the characteristics of technologies intervene in uses. Even if those authors consider that users play a great role in appropriation, they emphasize more the characteristics of the technology (their features and their spirit) and give a smaller place to users. This is especially clear with their concept of "faithfulness of appropriation". By evaluating the appropriation from the point of view of its "faithfulness" or "unfaithfulness" to the spirit that designers inscribed in it, they ultimately do not seriously incorporate the impact of users. In contrast, some authors argue that "best appropriation" can be considered as the most innovative one without taking into account whether it is faithful or unfaithful to the original spirit of the technology ([37]; [33]; [9]).

With the Theory of Practice [30], we have a framework able to explain how people intervene in uses of a technology. With the Adaptative Structuration Theory [10], we have a framework particularly efficient to explain how characteristics of technology play a role in uses. They are not easy to articulate (because they are partly constructed in opposition) but they both can be considered as a kind of outcome of the reflection in their particular field of research.

Nevertheless, they share the same weakness: they do not really take organization into account to explain uses of a technology. As we will see it below, literature currently claims for a wider reintroduction of this dimension in the reflection.

2.3 Two theoretical frameworks that under-estimate the role of the organization in the definition of uses

Orlikowski's reflection [30] is explicitly elaborated in reaction with the "social constructivism" approach that, until then, was largely dominating technology analysis (mostly, computer technology) ([23]; [4]; [54]; [5]). Through a detailed analysis on how technologies are invented and developed by designers, these authors highlighted that technologies are social constructions and helped to better understand the logic that guided their design [47]. The majority of the authors note that technology reflects the "dominant" interests (those who have the power to control the development process) through funding for example, to the detriment of the "dominated" interests (future users). From a very clearly Marxist perspective, the "social constructivism" often denounces technologies as being developed by the "dominators" to oppress workers.

Orlikowski [30] criticizes this approach by demonstrating that the attention to technology design methods led researchers to overestimate the role of designers. In particular, those works lay on an hypothesis which she felt unfounded: inventors could integrate a framework so structured into technology that users had only two choices, either adopt or reject it. The ERP "SAP" furnishes a good example of this type of technology. It seems so structured that users can have the feeling that the only choice is to use it the way the inventors conceived it to be used.

Orlikowski's [30] criticizes this hypothesis by demonstrating that, on a conceptual level as well as in her case studies, a technology can be used in extremely different ways. This furnishes the proof that technology does not embody structure. From Orlikowski's

point of view, the concept of appropriation is too limited because its position is related to the structure, which was embodied into the technology by designers. All these authors try to demonstrate how the initially embodied structure has been sidestepped, transgressed, etc. by users. So, for this author, in relation to a specific technology, users demonstrate a much greater creativity than "social constructivists" admit. She proposed the concept of "enactment" to take this creativity into account and to underline that uses are not related to structure embodied in the technology. Clearly, this critic of social constructivism conduces Orlikowski to give a greater role to actors in the definition of uses and, by contrast, a smaller role to the technology and to the organization.

But we have to be precise on this question. Orlikowski [30: 415] does not completely eliminate the question of organization from her reflection. On the contrary, she explicitly evokes the fact that uses depend on the leadership, the hierarchy structure and the remuneration/incentive systems. She is even much more precise than De Sanctis & Poole [10] on this question. At the first glance, it seems that she clearly explains that uses cannot be completely analysed if researchers do not take into account the hierarchical structure, repartition of power and HR politics and rules.

But, at this point of the reflection, we must take into account that Orlikowski [30] and De Sanctis and Poole [10] are inscribed in the same epistemological framework of interactionism. This epistemological framework permits them to be aware of the importance of work and organization in the explanation of uses but it gives them a singular definition of those phenomenon. In fact, those authors pay attention to the interactions at work, but they encounters difficulties to consider the global context of the organizational structure. Especially, they do not take into account the organizational structure as a whole in the interaction process. They consider that actors locally restructure social structures, work, organization, etc. through their interactions. All structures and the interactions between structures are instantiated in recurrent social practices that employees maintain with the other members of the organization. Therefore, they are intangible, they emerge from interactions between people in work situations.

This epistemological framework conduces them to describe with a lot of details how situations of work are organized, how technologies, actors and rules intervene in those micro-situations and how they are permanently built and rebuilt [15] but everything takes place in this micro area and the global organizational context is never really used as a major element of explanation [18].

Even if they are less explicit than Orlikowski [30] on the role of incentives HR rules, etc., De Sanctis & Poole [10] share the same point of view. For example, they clearly indicate that uses are influenced by skills of actors, their power, knowledge, and expectations about the technology. All those elements are themselves influenced by training, communication, and previous experiences and the knowledge and experience of the institutional context in which actors live and work [32]. The notion of "institutional context" is clearly taken into account but it is strictly limited to the context of the work/tasks that users do.

3 The contribution of the sociology of organizations in the analysis of the ICT uses

Since few years, the literature in the Information Systems field claims for a wider and more powerful definition of the role of organization in the analyse of uses of

technologies. We will present few important papers that argue in favour of this thesis and, after, we will propose to complete them with a wide re-use of results obtained by researchers in sociology of organizations during 60's, 70's and 80's especially in Europe.

3.1 Numerous researches in IS claims to better analyse the role of the organization as a whole

Even interactionism remains clearly dominant in IS (especially in Anglo-Saxon literature) [47], different reflections show a new interest for the role of structures in the analysis of uses of IT. To give examples of this new logic, we present and summarize five recent papers that appear particularly interesting from this point of view.

The first one is the paper of Donaldson on "Technological Frame Perspective" [13]. This paper remains clearly inscribed in an interactionist epistemology. It is even directly linked with Orlikowski's work because it proposes to re-use the concept of Technological Frame of Reference (TFR) developed by Orlikowski and Gash [32]. TFR indicates that uses of IT are oriented by "assumptions, expectations and knowledge [*that members of the organization*] use to understand technology in organizations. This includes not only the nature and the role of the technology itself, but the specific conditions, applications, and consequences of that technology in particular contexts" [32: 178].

If we analyse this concept, we clearly see that it is mainly oriented to the understanding of how people (and especially their mental representations) intervene in the construction of IT uses. As we evoke it for other Orlikowski's concepts above, it does not ignore the organizational context but it has a very situated definition of it. TFR can only be analysed in specific conditions in particular contexts.

In a first period, this attention to the specificity of situations do the strength of this concept. It permits different researchers to propose precise and insightful analysis of how TFR influences uses in concrete work situations (cf references in [13]). But, in a second period, Donaldson [13] evaluates that all those "context specific" analysis are an obstacle to generalisation and construction of cumulative theory. In fact, in each research, authors propose *ad hoc* explanations that cannot be generalized.

In consequences, Donaldson's paper continuously argues in favour of the analysis of the TFR structure (that can be the same in different organizations and work situations) and not only of the content of TFR (as it was done until now). This first paper clearly shows how the introduction of a relative distance to specific situations and a better analysis of structure appears as a way to increase power of concepts developed to analyse IT uses.

The second paper that we find interesting to present is published by Sinha and Van de Ven [46]. It does not belong directly to the IS literature and it clearly cannot be considered as inscribed in interactionist epistemology but it is particularly useful for our reflection because it demonstrates that attention to work situations implicates today a rehabilitation of "design of work" as an object of research. Work design can be defined as the system of arrangements and procedures for organizing work [46: 390]. This paper argues that analyse of work situation necessitates to analyse how work is organised, separated between different hierarchical levels, several people, teams and services and even between different firms (subcontracting, etc.).

This kind of researches were particularly developed in the 70's and in the 80's [46] but it had been largely ignored in the following years. It is really important to redevelop it because as those authors explain "IT is not simply a tool for automating existing processes (…) It is an enabler of work design changes that can lead to additional

productivity gains. In other words, a significant proportion of the increases we have enjoyed in economic productivity in the last two decades – increases typically attributed to IT – could very well be due to the new work arrangements that were enabled by IT" [46: 389].

This renewed interest for work design and organization is a major idea to improve Orlikowski's reflection. Interactionism approach develops a precise and very interesting vision of what is done and what happens in specific work situations but it currently needs to be better contextualized by indicating which kind of repartition of power (centralized or decentralized?), division of work, type of hierarchy, etc. we have in the organization where those work situations and those uses are observed.

The last two papers that we want to evoke are Leonardi and Barley [21] and Markus and Silver [24] ones. Leonardi and Barley's paper [21] is clearly inscribed in the IS literature (it has been published in *Information and Organization*). It presents the main trends of the debate on the relationships between technologies and organizations. It underlines that those relationships had always to deal with the complex frontier between the material and the social and that a consensus had been built on the idea that despite their materiality, technologies are products of negotiations ([6]; [16]) and, on the contrary, organizing revolves around interactions between people and machines ([48]; [27]; [49]; [1]; [45]; [43]). "Technologies resist, in the sense that they do not allow users to do whatever they want. However, the fact that technologies resist does not mean that users are at the mercy of the technology, only that they must adapt their practices accordingly" [21: 163-164]. For their part, Markus and Silver [24] refine definitions of De Sanctis and Poole by proposing to analyse the role of technical objects, functional affordances and symbolic dimensions in the uses of IT. We clearly see here that, as others, those authors claims for an articulated analysis of the role of people, of organization and of technologies in IT uses.

Even she continues to highlight the role of actors in the construction of uses, Orlikowski seems to share the same kind of idea in her last paper [31]. In her seminal paper [30], she does not really use "technology-as-artifact" to explain uses that are done of lotus notes. Technology-in-practice that means rules, norms and facilities were the only concepts she used to explain different uses. In her last one, we can see that she assigns a much more important role to the technical dimension of tools in the use that can be done of them. She clearly claims for a tight articulation between social and technological dimension of the life in organization. As we see in other papers presented above, it seems that organization and structures appear as a phenomenon that needs to be taken into account if we want to really analyse IT uses in details.

Finally, the critical realist approach can be seen as a new approach that tries to re-articulate those different dimensions [11]. In fact, these researches consider that objects (including people, material objects and social phenomena such as institutions) and relations among objects (for instance, friendship or master-slave relations) must be taken into account to analyse appropriation.

3.2   Some reflections that can be completed by articulating them with the sociology of organizations?

To enrich this reflection on what the consideration of the organization can bring in the analysis of the ICT uses, we suggest to use researches that, especially in Europe and in France, analyse the nature and the role of organization. From 60's to 80's, the sociology of organizations debates on the elements that characterize organizations. After

numerous debates [28], this field of the sociology constructs the idea that an organization can be defined by [22] :

1. *an horizontal division of work*. In an organization, we can find different degrees of repartition of work between people or services. This repartition is at the basis of the elaboration of an organization. This is because work is separated between people that coordination of those different tasks is necessary and that organization is created.

2. *a vertical division of work*. This division of tasks between different people regularly conduce to a vertical division of work which results in the definition of a hierarchy, in people that are in charge of the control of work of other people.

3. *A mechanism of coordination*. These mechanisms of coordination can be varied. For example, Mintzberg [26] distinguishes five different ones: the mutual adjustment, the direct supervision, the standardization of the methods of work, the standardization of the results, the standardization of the qualifications. But they characterize an organization.

4. *One or several goals*. The idea that organizations are finalized, that is they try to achieve goals has been identified since a long time [34]. Nevertheless, authors underline that this notion of goal must be used with caution. In fact, goals are always multiple and different among members of an organization. For example, Perrow [34] distinguishes the goals of production, the goals of firm , the systematic goals and the derived goals

5. *A certain perenniality*. An horizontal and vertical division of the work justify themselves only if these persons are involved in an activity which reproduces regularly. An organization thus joins in a certain duration. It can be variable but it is nevertheless an important characteristic of the organization.

These five characteristics constitute the basic elements that permit to define an organization. They take root very profoundly in reflection on organizations because they were already very widely present in the definition of the bureaucracy by Weber [52]. On the contrary, we can underline that very numerous works ([39]; [40]; [3]; [35]; [11]) attempted to detail these characteristics and to specify the mechanisms which allow to create them and to maintain them, etc.

Other papers will be necessary to make all the profit of the results produced by this literature. Nevertheless, in this one we suggest using these five characteristics to show how the re-use of this literature on organizations is able to enrich the reflection on the ICT uses.

4   Methodology, presentation of the case study and results

After presenting our methodology and our case study, we will present the main results of our study

4.1   Methodology and presentation of the case study

The investigation conducted here is strictly exploratory. The phenomena under investigation are not well known and their boundaries are ill defined. For these reasons, the case study seems to be the most appropriate research method [55]. Boundaries and logics of phenomenon we analyse (competences, work situations, uses of management tools) are uncertain. This pleads for a unique case study method [38].

The case study was carried out in a software and computer services company that we call DT[11]. This firm produces and markets several software packages (registry/public records office management, mail digitisation and management, document classification). In 2006, the company's turnover was 4.5 million euros and it employed a total of 48 people. The workforce is distributed among 6 departments: digitisation software (10 people), electronic data Interchange (EDI) software (7 people), customer support (10 people), implementers (8 people), sales (10 people), administration (3 people).

In the autumn of 2007, this SME began to use the 'think together®' software package, the purpose of which, according to its designers, is to *'facilitate and accelerate decision-making in organizations'*. In order to understand the 'spirit' of this technology, we conducted three interviews with the designers of the software. We also interviewed the SME's managing director. He told us that this software package was intended in the first instance for use in the Electronic Data Interchange software department. Accordingly, we interviewed more than half the members of this department (4 out of 7). In order to extend the scope of our analysis, we also interviewed the head of the customer support department.

The interviews were transcribed, coded, and validated across the research team and subsequently with the interviews. We also analysed secondary data in order to attempt methodological triangulation. A first level of encoding was used to reduce the diversity of the data and to sum up important elements in the interviews. A second level of encoding enabled us to identify the main themes arising during the interviews [25].

4.2   Results

As we present it above, the literature shows that the characteristics of the people and the characteristics of the tool influence ICT uses. But as the organization influences too very strongly these uses, before presenting the way this tool is used in this organization, it is at first necessary to present our case more in detail. In particular, it is necessary to describe how this firm divides the work vertically and horizontally and what are its goals. We can then present two particularly interesting results. The first one will underline how much goals of the firm influence uses which are made of this tool. The second will bring to light the fact that the vertical division of the work (through an attempt of (re)creation of a new hierarchical level) plays a great role in those uses.

4.2.1   *Division of work and goals of DT*

Although DT is relatively small (48 persons), we can find in this firm a relatively elaborated division of work. DT proposes three kind of products/services:

1. digitalisation,

2. production of software for citizens services (management of cemeteries, management of the family status, etc.),

3. production of Electronic Data Interchange systems articulated around a platform AIRS3 and around software applications ("file", "mail", "deliberations", "Customer relationship management" (GRC)).

These three kind of products/service have different types of organization:

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[11]   It is a pseudonyme.

1. The digitalization is especially an activity of engineering, integrating technical and software solutions often produced externally, implanted in an integrated and middle-term approach. This activity has not been concerned by the introduction of the software "think together®".

2. Software for the management of cities are developed in-house and are connected with the applications of Electronic Data Interchange (EDI).

3. The platform EDI and its applications are also in a logic of publisher (produced in-house) but also of integration (the strategy being to offer henceforth a platform and inter-operable applications). It is on this last segment that the uses of "think together®" were most developed.

DT is thus composed by four kinds of professions (and four kind of services):

1. The marketing, that is the commercial, that are all time outside from the firm.

2. Project managers (implementation at the customers and training)

3. Customer service (on-line support for the customers)

4. The R&D service.

The governance of this company is centred on an executive committee (CODIR) where we find the Chief Executive Officer (CEO - strategic management), the operation manager (technical management) and the sales manager (commercial management). Although centralizing the power, the CODIR acts clearly in interaction with the services. As OC (CEO of DT) explains: "*here we are a small structure. We know each other. We are close. We can take time to collect the various opinions before deciding. Even if it is us then in the CODIR, that make the decisions and who assume them*". The communication between the employees and the directors is also facilitated by the fact that the small size of this firm allows sales manager to be member of the CODIR and team leader of salesmen at the same time.

But there is no official team leader for the R&D service. The team leader is for the moment the Chief Executive Officer himself (OC). As he evokes it in the interviews that we had with him, this supervision asks him time that he estimates not to have and he thus wishes to create a new hierarchical level to supervise this service.

As we can see, before the arrival of the tool "think together ®", in particular for the R&D service, this company faces difficulties from the point of view of the vertical division of the work (the CEO wants to create a new hierarchical level). This difficulty in the division of work is linked to its difficulty in the definition of the goals that this firm must pursue, in particular for this activity of R&D. In the field of the Electronic Data Interchange, this company faces an acceleration of the cycle of products. The requests of the customers are more and more precise and more and more varied. Changes in products involve time to conceive the new version of the applications (what asks time to the R&D service) but also time to the other services of the firm.

This activity is characterized by a very strong link between activity of publishing and integration of IS. When R&D service conceives new applications, it has to train the project managers which will install them at the customer's and it has to train the customer support too because questions of customers will solicit them if these applications do not work correctly and to train the salesmen who will have to sell these new applications to new customers.

The fact of answering the requests of the customers has thus an important cost for this firm. Now these requests are more and more numerous and furthermore urgent. This company is thus confronted with a real redefining of the goals for this service of R&D. In particular, it has to build a tool of selection to determine the requests which the company can accept (because in spite of their cost, it estimates that they will be finally profitable) and those it has to refuse (because it considers them as unprofitable for her).

This firm is thus confronted to the question of the good distance which it is necessary to establish between his customers and its R&D service. Too close, this service would reach too easily their requests and would not allow the company to be profitable. Too distant, it would risk to refuse too many of their requests and would eventually annoy them (and make them leave towards the other software editors).

It is a relatively classic question for a R&D service. It is not moreover the first time that this firm tries to answer this question. It has already tried to answer it by introducing three years ago the mechanism of a "users club". This club gathers all the customers/users of the software sold by this firm. As OG (one of the employees of the R&D service) explains it: *"During the meetings of the "users club", we inform our customers: "this year we have X days of development to be dedicated to your requests of modifications. Say to us what you wish". Later, we try to organize a hierarchy between the requests, distinguishing those which seem the most shared between our customers and we assign them certain day number of development. For our customers, it is a way of answering their expectations. For us, it permit to control the number of days that we invest in the development because at first we fix them a maximum envelope. It is an important meeting: we can see the requests which appear, if they are shared by some of them, etc. By speaking to them about cost, we can also explain to them why we can make such development and not such the other one, etc. The "users club", it is thus a good means to manage the requests of our customers. Well, it is true that often these meetings are delicate for us because we often have to say to them that we cannot make what they ask us because it is too expensive...."*.

This organizational solution meets partially the expectations of DT but the acceleration of the requests and the difficulty which it meets to channel really the requests during the meetings of the "users club" do that this firm search for a new solution *"to leak out and organize into a hierarchy"* the requests of development which are formulated by its customers.

The CEO considered that the software "think together ®" can be one solution to move on this objective. Indeed, this software allows to accelerate and to improve collective decisions. Used in the R&D service, it could allow all the employees of this service (and not only one or two of them as it is the case with the "users club") to decide more quickly and more effectively which developments should be done.

The analysis of the uses of this software in this firm shows that the characteristics of the people and the characteristics of the tool gives important elements to understand the nature of these uses. But the organizational structure and goals of this firm are also crucial to analyse them.

First, we will see that people enact this software in very different ways. These results confirm Orlikowski framework [30]. These "appropriation moves" can be considered as differently faithful to the spirit of the technology introduced by its designers. These results confirm the theoretical frame of De Sanctis & Poole [10]. But, second, we will see that the question of the place of the R&D service with regard to the requests of the

customers / users constitutes another powerful factor of explanation of these uses. We will thus introduce this organizational dimension into the analysis.

4.2.2 RK, MPP and OG, three contrasted enactments - and differently faithful to the spirit of the technology - of "think together®"

In this organization, we found enactment of this software extremely different. For example, RK (an employee of the R&D service) declares: *"it had been four months since we multiplied the meetings to try to answer a problem: how to articulate our product "mail"* [which digitalizes received mails] *and our product "document"* [which classifies automatically documents]. *It had been months since our customers had asked us for this merger and we did not know how to do it. I take all the e-mails that we had been exchanged, I put them all in* ["think together®"]. *That was on Friday (...) That crackled, everybody expressed his opinion ... On Wednesday, we had a meeting and we went out of it with a concrete decision. We really freed the situation thanks to* ["think together®"].".

This enactment shows that, on this precise case, the software allowed to make quickly a collective decision that the classic software (here the e-mail) had not allowed to do. To use Orlikowski's terms [10: 416], this enactment can be considered as one "collective Problem-Solving Technology-in-Practice". We can also notice that this "appropriation move" is faithful to the spirit of the technology. On the basis of a classic democratic view, designers of these software consider that a decision is better if you "seek the opinion of most large number of persons in the process of the decision-making" (AM, designer of "think together®"). The example which we have just presented well reports it: the decision seems to have been effective because everybody was consulted at the same time and either in a sequential way and two-two as it is mostly the case with e-mail.

MPP, responsible of the customer support, reports us a completely different enactment of "think together®". If we use Orlikowski's term [30: 417], we can consider it as a "limited use technology-in-practice". MPP explains us that the use she was waiting for "think together®" was impossible and thus that she almost does not use it any more. She explains to us: *"When a customer subjects us a little bit complex problem to the phone, we use generally our "cook book". It is a word document where we listed all the problems which we have already met and the solutions which were brought to it. It works not bad. Sometimes also, when we have a specially difficult problem, we can send a small MSN message to a colleague to ask his opinion. Generally, he answers quickly... That works better than an e-mail for which, most of the the time, we do not have answer ... Nevertheless, it is true that our "cook book" begins to be too big. That would be good to be able to make requests by words, etc. At the beginning I thought that* ["think together®"] *would help us to make that"*.

This enactment is particularly interesting. It corresponds to what Orlikowski calls users creativity. Our interlocutor has a problem: her "cook book" became too big to be easily useful, the e-mail does not allow to have fast answers to the questions, MSN is almost of the order of the "do-it-yourself". She thus tests the capacity of the new software to resolve her problem. The use she expects has nothing to do with the spirit of this technology. The structural features proposed by this software are in complete gap with regard to what she wishes. In a completely logical way, she regrets that there is not in this software of "*search engine*". Conversely, she does not know well the structural features of this software. For example, she does not know that the "map" exists. When we show it to her, she declares: "*I, what I need it is: what is the solution which we can*

propose in such problem? How this solution had been found, by whom, etc. it is not really important ... From my point of view, this presentation of all those ideas muddles me up more that it helps me...".

To use De Sanctis & Poole's terms [10], we see here clearly that this "appropriation move" is not at all faithful to the spirit of this technology. While being in favour of this new software, this user analyses it with regard to problems she encounters in her activity. The fact, that the software was not conceived to resolve this kind of problem, do not enter into account in this logic: it is with regard to use that she wishes to produce that she estimates the utility or the uselessness of this software.

We could multiply the examples of varied enactment and differently faithful to the spirit of this technology. For example, we can evoke the case of OG, one other employee of the R&D service who - although wishing to develop uses relatively faithful to the spirit of the technology - has for the moment a very limited use of "think together®". Indeed, he finds that ""*think together®" is not easy to read and to use. There is really big efforts of ergonomics to do. For me, in the current version, this software does not really allows us to make quickly good collective decisions* ".

The frameworks of both Orlikowski [30] and De Sanctis & Poole [10] allow to analyse in details the nature of the uses produced in this firm. However, it seems that this analysis is enriched when we take into account, besides, the structural characteristics of this organization.

4.2.3 Those uses are also defined by goals and division of work in this firm

The literature in sociology of organizations enriches the analysis of these uses. For example, even if we cannot enter into details, Crozier & Friedberg's concepts [7] bring interesting elements to analyse the enactments that we described above. From this point of view, the low use of MPP appears as relatively logical. "Think together®" is intended to improve the decision-making in the R&D service. As responsible for the customer support, MPP is outside of the R&D service. She has links with this one (when the new developments realized by the R&D do not work at the customer's, they ask explanations to her service) but, situated at the border of the R&D service, it is finally logical that she is also "at the border" of uses of "think together®" and do not really use it.

In the same way, interview with OG, employee of the R&D service, shows that he does not feel himself correctly recognized and valued in this firm. He even declares to be about to leave it. His limited use of "think together ®" may also be interpreted to his position of dominated in the relations of power in this firm. In the same way, the intensive use of "think together®" by RK appears as correlated to the dominant position which he occupies in this R&D service. Even if we are not able to go deeper in this kind of analysis in this paper, we indeed notice thus that an analysis more directly "organizational" of ICT uses allows to enrich strikingly this research perspective.

In this same logic, we clearly see that beyond their varieties, enactments presented above are all linked to the question of their goal and, in the case of this firm, towards the difficulty to position its R&D service and its efforts of development with regard to the needs of her customers. RK evokes that "*it had been several month when customers had asked us for this merger*" whereas MPP does not use "think together®" because it does not allow to answer the requests of the customer as effectively as her cook book, even if this one became "*too big*", difficult to use, etc. Beyond their differences, enactments thus seem linked with the organizational context in which they appear.

A third element allows to bring light that the enactments do not appear simply in the interaction between people and technology but are really shaped by organizational phenomena. During our first interview with OC, the CEO of DT, when we asked him: "*could you say to us why you decided to implement* ["think together®"] *in your firm?*", he answered: "*it is a little complicated story ... The R&D service where I would like to use it had no real manager for a long time ... We had a first person who was supposed to be manager but in fact, he took on charge only the technical aspect. It not was him who really made the management of the team ... When he left for reasons of health, we replaced him but that it was a very bad recruitment choice ... At the level of the relationship with colleagues, that was not good at all. We fired him and, since, I assume the management of this service ... But I have too many things to do, I can not enough take time with them. I have in the team, somebody, DC, whom you go to meet, whom I would like making him rise as manager. I think that he has shoulders and competencies for that but it has to mature little by little ... In my idea, the use of* ["think together ®"] *can help him to go up to this role".*

This answer is particularly interesting because it justifies the use "think together®" not by the idea that the employees's need it, nor by the technical characteristics of the software but because this CEO is confronted to an organizational problem (the absence of a responsible for R&D service) and he hopes that "think together®" would allow him to resolve this problem.

This example shows that the implementation and the uses of "think together®" are in narrow interaction with the difficulties that this firm encounters at present on the goals of its R&D service and on its vertical division of the work. The uses of "think together®" are shaped by the characteristics of the users and by the characteristics of the software but they are also defined by the search for a new solution to filter the requests of the customers which arrive to the R&D service. DC has already this role in the organizational structure. But OC, the CEO of DT, implements "think together®" in his firm to strength this role and to add it a function of animation of the collective decisions which would move DC closer to the role of responsible of R&D service.

This organizational dimension of the uses is so strong that it is from this point of view that OC judges the global efficiency of "think together®". An interview realized three months later with OC shows that its relative disappointment about uses of "think together®" does not lie on the technical limits of the tool. He agrees to say, for example, that "think together®" allows the firm to decide how to merge mail and document products. But, he underlines that he regrets that "*the uses too much limited of* ["think together®"] *do not really allow the R&D service to reposition collectively with regard to the requests of the customers and to help DC to play his role of responsible of the service*". It is thus from the organizational point of view and not only from the technical one that he judges the efficiency of "think together®".

Other actors of the firm are aware of organization stakes that exist in the uses of "think together®". So, RK, who "*thought at a moment that* [he] *could be an efficient responsible of the R&D service*" considers today that: "*this team does not really need a chief*" and that every project manager "*perfectly knows how to lead his projects by himself*". Compared to these comments, the very active way that he had to use "think together®" for the problem of the merger of products mail and document can be also analysed as an attempt of demonstration - when he understood that he will not be the responsible of the R&D service - that this team does not need a chief and that the project managers know perfectly how to work completely autonomous.

From this point of view, we see that the uses of ICT must be also analysed with very classic concepts in the sociology of organizations. This firm seems to be in a very well known situation: the future chief choose by the CEO has difficulties to build his legitimacy in face of his ex-colleagues that consider that they were so justifiable at least as him to have this responsibility. The point of view of DC on this possible promotion are moreover particularly ambiguous. During the interview, he never evokes this question directly, he asserts that the decision to create a new hierarchical level is not still effective (while the CEO asserted us the opposite), never mentions that he is the anticipated holder, etc.

These various points of view confirm that all the actors of this R&D service are aware of organizational stakes incorporated in uses of "think together®". The future chief who knows that his legitimacy is weak does not display as a conqueror and, conversely, the actors who claimed to occupy this post, try to demonstrate its uselessness. We are thus here in very important but classic organizational phenomena towards the sociology of organizations. It thus seems to us that this kind of reflection must be reintroduced in the reflection on the uses of ICT.

5 Discussion

The results of this case study allow to introduce a discussion on three complementary dimensions. First of all, they demonstrate the validity of the theoretical frameworks of Orlikowski [30] and De Sanctis &Poole [10]. But they also underline how much the results produced by these theoretical frameworks are focused on the micro-located dimension of these uses. In the second point of our discussion, we will claim for the necessity to add to this micro-located analysis, a more global analysis which integrates an organizational dimension. Finally, we will underline that by reintroducing this organizational dimension in the analysis of uses of ICT, we have the possibility to reuse all concept built by the sociology of organizations.

5.1 Orlikowski [30] and De Sanctis & Poole [10], two frameworks relevant but focused on a micro-located definition of uses

The results of our case study confirms the relevance of the theoretical frameworks of Orlikowski [30] and De Sanctis & Poole [10]. First, they show that the enactments of the actors are highly varied and that they are rich of a real inventiveness. The case of MPP, which waits from "think together®" a use which neither the designers nor the CEO has ever evoked, constitutes a particularly interesting example. The users are completely free to reinvent the uses of a software, including if it conduces them not to use it because they judge it on the basis of a use which this one has never claimed to be able to return. Second, this case study confirms that the characteristics of the software play a role in the uses. In particular, the spirit of the technology appears as a powerful concept to analyse uses.

But this case study also puts in evidence that these two theoretical frameworks, although appreciably different, share the same difficulty: they limit their analysis to the only situation of interaction between the people and the technology. Their reflection is confined in the immediate context of uses. In the data presented above, these theoretical frameworks analyse in detail how the uses of "think Together®" allowed to merge "mail" and "document" products and on the contrary, how it did not allow to meet the expectations of MPP, the responsible of customer support. Nevertheless, they do not analyse how these uses are positioned with regard to the major strategic reorientation of this firm.

5.2 Towards the consideration of a more organizational and more global dimension of the uses?

While being particularly interesting, these analysis of the uses do not allow to see that the question of the merger between "mail" and "document" products participates of a much wider and more very strongly strategic question on the choices that this organization has to do to reposition its R&D service with regard to the requests of the customers and better choose its investments in development.

The detailed presentation of the organizational context of these uses underlines that this firm is not any more satisfied of its tools of coordination as the user's club. Especially, it wants to reorganise itself to better identify and select the requests of development done by the customers. The use of "think together®" to merge "mail" and "document" products is not thus simply a "problem solving technology-in-use" as we had characterized it thanks to the theoretical framework of Orlikowski [30], it is as well the validation of the fact that "think together®" can be a solution to bring to a successful conclusion the strategic repositioning of the R&D service with regard to the requests of the customers.

On the contrary, the low use of MPP must not be simply seen as the fact that this person has personal characteristics and\or that the software has technical characteristics which conduce her to a limited use. This low use shows as well that, in this reflection on the strategic repositioning of this firm, the role of the customer support service is not perfectly established. Indeed, if, as announces it the CEO OC, "think together®" becomes one of the major channels of the strategic reorientation of this firm, the low use of MPP is worrisome because it means that the customer support service is weakly involved in this strategic repositioning. On the contrary, this low use can also mean that, in spite of what asserts OC, "think together®" is not really the main channel of this strategic reorientation of the R&D service. But in that case, it means that it is the idea of OC (the CEO) to use "think together®" to help DC (the anticipated responsible for R&D service) to play his new role is not followed by effect. In a case as in the other one, DT has real organizational challenges to face and resolve.

As a supplement to the frameworks of Orlikowski [30] and De Sanctis & Poole [10] who describe in detail the uses that appear in interactions between the people and the technologies, it thus seems particularly important to develop a real organizational analysis of these uses, that means an analysis which positions these uses with regard to the questionings which are then current in this organization about its horizontal and vertical division of the work, its goals, its coordination and its perenniality.

5.3 Towards the reintroduction of the classic research questions in the sociology of organizations?

Finally, these more organizational and more strategic dimensions in the analysis of the uses of ICT lead us to reintroduce in the analysis very classic dimensions of the sociology of organizations as the question of the distribution of the power and the uncertainties [7], professional identities and of change management [22].

The analysis of the uses of "think together®" shows that if the characteristics of the users and of the software explain some of these uses, we enrich very strongly this perspective when we analyse these uses by re-using the classic works of the sociology of organizations [3]. In fact, it seems that the uses of "think together®" are linked with the fact that the actors, as MPP, are held outside of the relations of power which structure the R&D service in which this software is used or that employees, as RK, do

not recognize the legitimacy of the anticipated holder of the role of responsible for R&D service.

Beyond the localized analysis of uses, we perceive that the implementation of this software and the varied way it is used in this firm can be analysed as a relatively classic process of change in an organization: some actors are out of this process of change. There are relatively neutral. Other think that they will win with these new logic and other think that they will lose. The uses made of "think together®" are also connected to their location with regard to these transformations. These dimensions thus seem to have to be taken into account in the analysis of the uses of this software.

6 Conclusion

This research asked the question of the interest to introduce a clearly organizational dimension into the reflection on the uses of ICT.

The literature review shows that the frameworks of Orlikowski [30] and De Sanctis and Poole [10] establish two different but complementary perspectives to analyse the uses of the ICT. Orlikowski [30] develop more particularly the fact than the characteristics of the people are crucial to understand the uses of ICT. De Sanctis & Poole [10] insist rather on the role that the characteristics of a technology play in these uses.

But these relevant frameworks have in common to analyse the uses in a very localized way. We see that numerous works in IS claim currently for a reintroduction of a more global and organizational dimension in the analysis of the uses of ICT. We enrich this reflection by showing that the researches developed in the sociology of organizations could be re-used to deepen the reflection on ICT uses.

As this idea is still exploratory, we chose the methodology of the unique case study to begin to support it. The analysis of the uses of "think together®" in the firm DT shows that, according to what assert Orlikowski [30] and De Sanctis & Poole [10], these enactments are highly varied and differently faithful to the spirit of the technology. Our results also put light that to be complete the analysis of these uses need to take into account as well the fact that they are linked with the strategic reorientation of this firm and, more particularly, its questionings on the position that the R&D service has to adopt with regard to the requests of development formulated by the customers. The results of our case study confirm that it is necessary to take into account better the organizational dimension in the analysis of the uses of ICT. We noticed that all the classic research questions of the sociology of organizations (distributions of power, the position with regard to the change in the organization, etc.) emerge during the analysis of the uses developed in that case. Our discussion attempted to transform these results into tracks of research for the future.

Our results must be naturally analysed with regard to the limits of this study. They seem completely valid for our case study but their generalisation remains to establish. We formulate the hypothesis that this case is exemplary for the Small and Medium Enterprises that use ICT to modify their practices of management. To increase the generalisation of these results, it would be necessary to replicate this kind of study in similar situations but also to study other types of ICT in other economic sectors.

In a general way, this research shows that the analysis of the uses of ICT necessities a double attention on the very local and sometimes technical dimensions of the uses and on a much more global and more organizational vision of the strategic context in which they are produced. The difficulty to articulate these various dimensions constitutes our main perspective of research.

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