KNOWLEDGE MANAGEMENT PROJECTS AND THE LEARNING CYCLE: SYNERGY OR FALLACY?

Victor Oltra, University of Valencia, Spain (victor.oltra@valencia.edu)

Sue Newell, Bentley College, USA (snewell@bentley.edu)

INTRODUCTION

The optimization of (organizational) learning processes (e.g. Crossan et al., 1999; Bontis et al., 2002) appears as a key motivation – albeit often implicit – for the development of Knowledge Management (KM) strategies (Balbastre et al., 2003). This learning may either involve the exploitation or the exploration of knowledge (March, 1991). Knowledge exploitation aims to prevent unnecessary duplication of learning, so that one person or group learns from the experiences of another person or group, so that the former do not themselves need to have the experience. Knowledge exploration aims to encourage new learning so that something is created that did not previously exist. KM strategies, whether aimed at exploitation or exploration, are frequently initiated by means of formal KM projects. However, KM projects often fail. A number of reasons for this have been identified. In particular, badly managed cultural contexts and social processes are common barriers to the fulfilment of KM-related learning goals (McDermott, 1999; Newell et al., 2001; Scarbrough and Swan, 1999; Storey and Barnett, 2000; Storey and Quintas, 2001).

Having the above concerns in mind, research exploring the learning dynamics that interact with the design and implementation of KM projects seems an interesting way to explore the problems associated with KM project outcomes – especially taking into account that such learning dynamics should, if appropriately accomplished, act as

triggers to successful, broader learning processes throughout the organization (Crossan et al., 1999). Therefore, if KM projects are aimed at optimizing organizational learning processes – and thus knowledge transfer across the broader organization – then the learning processes directly related to the development of the KM project – and thus knowledge transfer within the KM project context – may well play a key role in the success of both the KM project and the organization-wide learning processes.

Our research, thus, focuses on two research questions. (1) Assuming that KM projects are learning experiences themselves, do the design and implementation of KM projects sufficiently take into account the different processes of learning? (2) When KM projects do not fulfil the established goals, can any of the causes of failure be found in relation to (i) the neglect of any of the learning processes? (ii) the neglect of the complex dynamics of organizational learning processes – particularly, an unreflective urge to implement KM-enabled mechanisms that 'short-circuit' the learning cycle?

This paper is structured as follows. First, we consider more fully the relationship between KM initiatives and learning. We then describe the methodology that we have adopted in this paper, essentially a case-based one. We then describe and analyze two cases, using the theoretical concepts previously identified as important. Finally we discuss the results of our analysis and then conclude by highlighting the practical and theoretical contributions of our paper.

THEORETICAL BACKGROUND

Learning is a process that involves grasping (coming to possess) some body of knowledge as well as using this knowledge to develop practical expertise and so come to know how to do something (Huber, 1991). This is articulated clearly by Cook and Brown (1999) who state that 'knowledge is a tool of knowing'. This view of learning challenges the supposed divergence between those who propose a cognitive view of learning (e.g. Argyris and Schön, 1978; March, 1991; Simon, 1991) and those who propose a situated view of learning (e.g. Brown and Duguid, 2001; Gherardi and Nicolini, 2000; Lave and Wenger, 1991), rather indicating that both aspects of learning are necessary to become knowledgeable. Indeed, Cook and Brown (1991) suggest that these two views simply represent two different epistemologies – an epistemology of

possession and an epistemology of practice – and that it is the 'generative dance' between the two that is crucial to achieve effective learning.

Kolb (1984) uses the notion of a learning cycle, rather than a dance, to articulate the inter-relation between the cognitive and situated aspects of learning. The term 'cycle' perhaps suggests an overly linear view of the learning process, as compared for example to the notion of a 'dance'. Nevertheless, the learning cycle can help us to explore the inter-relationships between the knowledge and knowing aspects of learning. Kolb suggests a set of four processes (concrete experiences, observational reflection, abstract conceptualization, active experimentation) that have to be gone through in order for learning to be established. Learning can begin at any point in the learning cycle, but we will illustrate beginning with concrete experiences of a project team.

The team, perhaps a team brought together on a KM project to initiate a particular KM strategy, engages in some activities together (concrete experiences). Then, at a particular milestone, they can observe what has been achieved and reflect upon why certain objectives were not achieved or not achieved to the standards required (observational reflection). The importance of such reflective processes has been recognized by others (e.g. Ayas and Zeniuk, 2001). They can then develop hypotheses (abstract conceptualization) to explain poor performance – for example, the team can decide that they did not engage sufficiently with key stakeholders who are going to be expected to use the products from their KM project. Team members can then try to build stakeholder relationships (active experimentation) through different types of networking activities. If they still find that stakeholders are not engaged with their project, they will need to develop new hypotheses and test these (i.e. iterate through the learning cycle). However, if the stakeholder networking appears to have facilitated improved user acceptance of their ideas the learning cycle is complete, since they have learnt how to improve stakeholder engagement.

The learning cycle, thus, emphasizes that there is both behavioural/situated-practice and mental processing/cognitive work involved in learning. Thus, from a situated learning perspective we learn from our actual interactional experiences (concrete experience) and practice and try out different things to find out what works best (active experimentation). This kind of trial-and-error learning was emphasized traditionally by the behavioural school of learning, for example with Skinner's (1953) operant

conditioning theory. More recently the situated learning theory of Lave and Wenger (1991) also emphasizes situated practice and learning from our engagement in ongoing interactional situations. At the same time, we can learn in a more cognitive way than simply trial-and-error so that we make sense of our experiences without having to try out each variant until we find the solution that works best. Thus, we can engage in observational reflection of our experiences and come up with abstract conceptualizations that help to make sense of these experiences (Argyris and Schön, 1978; March, 1991; Simon, 1991). The learning cycle (Kolb, 1984), like Cook and Brown's (1999) generational dance, suggests that learning requires both situated practice (knowing) and cognitive processing (knowledge) to be effective.

Once a person, group or organization has iterated through the processes of the learning cycle, they can be said to be knowledgeable – they will both possess knowledge about and know how to behave in a particular type of situation to be effective. The first research question that we explore is the extent to which a KM project supports the development of both knowledge and knowing.

The second question in this paper is to consider whether what has been learnt in a KM project can be transferred across an organization, so that others become similarly knowledgeable even though they may not have gone through the learning processes during the actual KM project. Taking our KM project team example, knowledge transfer suggests that the team can make their knowledge about the importance of stakeholder engagment for effective roll-out of a new initiative, explicit as a set of recommendations (essentially the codification of their abstract conceptualization that they have found to be effective through active experimentation) and transfer this to other teams who will then be able to learn about the importance of stakeholder engagement without having to go through the situated learning experiences that achieve knowing-in-practice. In other words, abstract conceptualizations or explicit knowledge (Polanyi, 1966) can be transferred to others so that these others need neither to engage in situated practice or mental processing, but can simply follow instructions – the manual, advice on lessons learned, or the best practice template as advocated by the output of the KM initiative.

In this paper, we consider characteristics of knowledge that make it difficult to achieve learning (knowledge exploration) in the context of a KM project initially and then, make it even harder to transfer this learning (knowledge exploitation) to achieve broader

organizational learning. Specifically, we suggest three characteristics of knowledge that make learning problematic within a KM project itself, and then make organizational learning from this even more challenging. First, knowledge is distributed, since any given business process will usually involve multiple actors, each engaged in an aspect of the process (Gherardi and Nicolini, 2000) and likely to have knowledge about the parts closest to their expertise and position, but not about other parts. A KM initiative will be directed at changing some aspect of a business process, suggesting that for the KM project team to learn how to do something differently, the distributed knowledge has to be brought together so that a shared understanding of the process is established. This is necessary for adequate reflection to take place to allow the generation of new ideas for how things might be done. Second, knowledge is ambiguous (Tsoukas, 1996), so different people or groups may interpret a given concept or practice in different ways due to 'cognitive cages' (cf. Dougherty, 1992) that restrict how we view the world and therefore what we consider to be valid knowledge. Syntactic and semantic barriers to knowledge sharing (Carlile, 2002) need to be considered, and common understanding is fundamental (Nonaka, 1994) to overcome them. For learning to be effective, there must be a reflection on these different understandings that allows those involved to move to a new, agreed conceptualization of how things might be done differently. Finally, knowledge is disruptive (Christensen et al., 2000; Vaughan, 1997) since, as a source of power, changes in practice that undermine one's knowledge will be resisted (Carlile, 2002). Group or individual knowing 'straight-jackets' often block 'perilous' knowledge transfer attempts in order to maintain their power/knowledge base. So the KM project may not consider, or dismiss, suggestions for a change in practice, that threatens the position of some members of the KM team.

These characteristics of knowledge which make learning challenging within the context of a KM project, make the transfer of learning even more difficult, as we will demonstrate in our cases. We next turn to our cases, following an outline of the methods we have used to explore our research questions.

METHOD

A case study strategy (Hartley, 1994; Platt, 1988) has been chosen to explore two independent KM initiatives at two Spanish subsidiaries of multinational organizations.

The field study has an exploratory nature, since it is aimed at, first, illustrating the concepts presented previously with examples from the cases and, second, advancing in the journey toward the understanding of the dynamics of such a framework in the specific context of KM initiatives. Certainly, a theoretical framework, including key concepts, was explained above with some detail, so the authors are admittedly adhering to such a framework in their empirical investigation. However, it is not the aim of the authors to 'validate' such a framework, not even to 'measure' any variables – at least in a quantitative fashion – included in the theoretical framework, but to use this framework as a supporting tool to analyze the complex dynamics of introducing KM initiatives and, thus, attempting to develop conceptually well-grounded ways of explaining and understanding the key issues related to the performance of such initiatives and their broader organizational implications. Therefore, this study is exploratory, since the specific context of KM and, particularly, the links between KM initiatives, Kolb's learning cycle and transfer-deterring knowledge features are actually developed *with* and *after* the case analysis, not before it, so the cases themselves act as triggers for further, more refined conceptual development – not as 'theory vs. reality-comparing' mechanisms, an empirical approach not employed in this investigation (cf. Hammersley, 1995).

The case companies were chosen taking into account their potential to shed light over the phenomenon researched (Stake, 1995), since they provided examples of two contrasting types of KM approaches. Each case organization is a Spanish subsidiary of a multinational knowledge-intensive company: Alpha is devoted to business consultancy, whereas Beta deals with electric equipment design, manufacturing and maintenance. KM initiatives were scarce in Spain at the time when Alpha and Beta launched their KM projects. Certainly, Alpha and Beta can be regarded as Spanish KM-pioneers, so these cases can be especially interesting as illustrations of KM initiatives in KM 'green-field' contexts (such as Spain at the turn of the decade). Data used in this paper were collected – as part of a broader investigation involving KM, organizational learning and human resource management – some time after the KM initiatives had already been launched. Key people at different hierarchical levels and organizational units were interviewed in both organizations, and relevant corporate documents – when available – were analyzed.

More specifically, regarding Alpha, a CKO was appointed at Alpha's parent organization (i.e. the Spanish subsidiary of a professional service multinational). This person, responsible for KM at all the Spanish units, would appoint a number of knowledge managers under her direct responsibility, one for each of the business units, Alpha being one of them. Apart from the corporate CKO and Alpha's knowledge manager, three additional people were interviewed: an Alpha's manager-consultant, also part-time devoted to KM-project development within an Alpha's specific sub-unit (organizational-strategic consultancy), a senior consultant and a (junior) consultant, these latter within Alpha's sub-unit above mentioned.

As for Beta, the KM project was fully designed by external consultants and then approved by corporate top management. Then, it was assigned to the Human Resource (HR) unit. Therefore, HR people were responsible for the implementation of the KM project, although many responsibilities were delegated to line management, who had some degree of autonomy on how to implement the KM tool among their own people – with quite different outcomes. The field research was centred on a specific industrial setting of Beta's parent company, where both the biggest Spanish factory and Spanish corporate headquarters of the main line functions (Operations and Supply Chain Management) were located – so Beta *strictu sensu* is formed by these specific units. Accordingly, interviewees were Beta's HR manager, Corporate Head of Supply Chain Management (SCM), Corporate Head of Operations, a local factory Operations Manager, and a graduate trainee in SCM.

In total, nearly 25 hours were spent in interviewing. For our specific type of research, careful selection of a limited number of key informants with whom to maintain relatively deep discussions was the strategy considered most appropriate, especially taking into account the qualitative nature (Maxwell, 1996) of our investigation . Besides, the hierarchical diversity of the informants has strengthened a more consistent and balanced picture, both in the sense of traditional triangulation (Yin, 1994), and also in the sense of generating more refined and critical empirical materials through cross-informant interpretive analysis of primary data. Interviews, although with some prior structuring, were basically open and purposely interactive (Holstein and Gubrium, 1997; King, 1994) – i.e. alongside more 'conventional' questions, the interviewer would mention a key concept or ask for an example of a given situation, then the interviewee

would have to provide detailed accounts of what he/she would think that, in their specific organization, has happened or is happening, according to their personal experience and/or to what they may know.

In this sense, interpretive techniques for analyzing the interviewees' explanations have played an important role in the researchers' effort to understand the phenomenon being analyzed. For instance, the very concept of 'knowledge management' was not taken for granted for the researchers before the interviewing process, nor was it pre-assumed as 'objectively' defined by a key interviewee (such as a senior manager with strategic KM responsibilities). Instead, different people were asked about *their own* understanding of what KM was, assuming not only that being 'wrong' about this understanding would be impossible (Tsoukas and Vladimirou, 2001), but also that the *collective* contents of such definitions and understandings – with their similarities and differences, their synergies and contradictions – would build the most genuine definition of KM – an organization-specific KM understanding (or many of them, even conflicting ones) with a high potential for contributing toward 'discovering' the why's and how's of KM-project performance. If interesting conclusions can be reached by simply analyzing similarities and differences among interviewees about a broad, basic concept, further discussions can be developed after analyzing the accounts given regarding other organizational issues.

CASE OVERVIEW

Alpha is a Spanish subsidiary of a large global professional services organization. In the late 90s, a global KM project was launched. The aim of the project was to increase the utilization, by means of integration, of the large number of databases that, at that time, were dispersed throughout the different subsidiaries, associate companies and departments. The rationale for the project was that increasing utilization of these integrated databases would improve efficiency and reduce opportunity costs. A KM corporate unit was created and a Chief Knowledge Officer (CKO) appointed. The main emphasis of the project was to create a sophisticated and comprehensive corporate intranet that would allow access to the distributed databases. However, despite this technological emphasis, the KM department was aware of the importance of considering people and culture issues in order to guarantee the success of the KM project. The

project team did manage to develop a technically sound intranet. There were some cultural issues, such as low mutual trust and high fear about sharing – in the context of a fiercely competitive 'up or out' career system – which created problems for effective knowledge transfer. These cultural issues impeded the transfer of individual knowledge into the organizational memory, i.e. the databases. Despite these limitations, the KM project was perceived as highly successful, since the initial goals of database integration and widespread and versatile intranet-based information management were achieved.

Beta is a Spanish subsidiary of a large multinational company specializing in the design, manufacturing and maintenance of a variety of electricity-related products and industrial systems. Beta's parent company is a truly global organization; production centres, dispersed worldwide, specialize in specific products which are then distributed to many countries. The KM project, however, launched in Beta in the late 90s, was a strictly national project, developed in collaboration with a KM-specialized consultancy. From the beginning, the KM project was focused on the implementation of a KM tool based on intranet technology. The corporate HR department was responsible for the initiative, and defined it – following the consultancy software-package definition – as 'a system to foster the sharing of critical knowledge by any employee across the organization'. In other words, the KM *software* –rather than a comprehensive KM *project*– aimed at incorporating into an intranet-supported database any kind of work-related relevant ideas and suggestions of employees that could be later retrieved by others to help them fulfil their assignments better. Initially the KM tool was piloted in a couple of departments and was then progressively rolled-out to other parts of the organization.

The HR department assessed the project as a moderate success albeit they recognized the potential for improvement. However, the views from other parts of the organization were more mixed, with some seeing the project as a complete failure. The KM tool was, *technically speaking*, successfully implemented. However, its use as a tool to improve day-to-day work was more problematic. On the other hand, knowledge creation and transfer processes were widespread within the firm, but paradoxically they were rather independent from the dynamics of the 'official' KM policy and did not rely on the KM tool.

CASE ANALYSIS

In this section, a sequential analysis of the KM projects is conducted, from the creation of the KM-project teams up to the transfer of the 'lessons learned' by these teams to the rest of the organization. First, some consideration is given to the characteristics of the KM-project teams at each organization. Second, we focus on how the learning cycle was initiated within each KM-project team. Third, we will comment briefly about the knowledge transfer issues within each team. Fourth, our attention is focused on the transfer of knowledge from the KM-project team to the rest of the potential KM users across the organization. Here we shall assess the extent to which lessons from the KM-project team have been learnt and how much the KM tools and methods are accepted and used throughout the organization.

KM-project teams

In both case organizations, a team was created to develop and launch the KM project. However, in neither case did these teams consist of full-time people with specific responsibilities assigned. They were rather emergent, diffused teams. In other words, people were formally assigned to the KM project teams, but KM responsibilities were also shared by other people on a 'please do me a favour' basis. Also, their decision-making freedom was limited by broader organizational structures and policies; these formal structures and policies, sometimes, even contradicted the KM goals.

At Alpha the organization-wide IT infrastructure and HR policies, which were dictated and maintained at both the international and local (Spanish) levels by the *very* senior management (which excluded the local CKO), imposed serious constraints for really effective KM policies. On the other hand, at Beta, KM was *commanded* by local senior management, who were following advice of an external IT consultancy. The operational issues of the KM project where delegated to the local HR people, who then shared their responsibilities with line management, although clear division of responsibilities was not established and, indeed, the very existence of a true 'KM-project team' can be seriously questioned.

Despite these similarities in terms of being constrained by the organizational context, there were differences between the two project teams. Thus, the KM-project team at

Alpha was relatively cohesive – a team lead by the CKO, plus other people specifically trained in KM, and even at lower organizational levels there was someone devoted part-time to KM issues. On the other hand, the KM-project team at Beta could hardly be regarded as a team, since the KM project was top-down imposed with little attention to empowering people with any responsibilities beyond the operational implementation of the KM tool and the (very difficult) 'selling' of the project and its virtues across the organization.

KM-project teams as 'triggers' for the learning cycle

The way KM-project work itself is initiated, and thus the way that learning dynamics are triggered within the team in the first place, deserves careful attention. Further learning, from the team to the rest of the organization, may well depend on how KM-project team internal dynamics were approached. In this respect, KM-project team work was initiated in different ways at Alpha and Beta. Regarding Alpha, senior management of Alpha's global parent corporation identified a key cross-organizational strategic challenge: the need for an effective, global integration of thousands of dispersed databases. Careful reflection upon this situation led to the decision to develop a KM project, which could provide – alongside other benefits – the technical basis for achieving such an ambitious target. Accordingly, the ambiguous and disruptive features of knowledge were minimized with this strategy. This was very helpful in the effective triggering of the learning cycle. Regarding ambiguity, it was kept to a minimum, since everyone believed that there were far too many databases, consuming precious working time to locate required information. So equating KM to database integration, even knowledge to 'bits of data from databases' was sensible, at least in this initial state of the KM project. Of course these definitions of knowledge and KM were not rigorous, but they were useful for encouraging people across the organization to share a common understanding about these issues and, more importantly, to generate a positive attitude toward the KM project. As for the disruptive nature of knowledge, it was also minimized in this first stage since everyone believed the idea would be very useful to improve their day to day work: it was a typical 'win-win' situation.

Once the rationale and goals of the KM project had been established, people were appointed at Alpha's global parent corporation to build the different KM teams

worldwide. These teams (including the Spanish one considered in this research) had the initial task of, first, examining the existing practices involving the use of the different databases to be integrated and, second, once the integration was successfully accomplished, they would become the 'experts' in assessing progress and detecting inefficiencies in all kinds of knowledge processes. These responsibilities were laid out clearly so that people in the team started to work together with a shared mindset much influenced by this 'go out there and see what is happening' command. Such a mindset encouraged people to believe that abstract concepts should follow the detection of actual challenges. Indeed, these dynamics were consistent with a sound awareness of the distributed nature of knowledge, since top executives first, then the CKO, did take into account the need to consider the views, perceptions and experiences of people from across the organization, and especially from those who were expected to become key users and contributors to the new KM tools and processes.

Regarding Beta, as discussed there was no real KM-project team assigned to work on the project. This 'team' was created to take responsibility for the *implementation* of a KM tool that had already been designed up to its finest technical details so that their job was to persuade other people about the benefits of using the tool. This situation at Beta indicates a serious neglect of the problems posed by the distributed, ambiguous and disruptive nature of knowledge. Certainly the intentions were good, but many decisions made at the strategic level were not sensible from a knowledge-transfer perspective. Both the ambiguity and distribution of knowledge proved to be important obstacles for the successful launching of the KM project. On the one hand, the KM-project (pseudo)team members (HR manager and SCM head) were *informed* about the decision to implement the KM project and *commanded* to be responsible for its success. This meant that the key concepts and assumptions about the scope, style, and even the operational procedures involved no discussion. This is a clear example of neglecting the perils of both knowledge ambiguity and distribution, and also demonstrates that in many situations, as here, these attributes of knowledge are inextricably linked. On the one hand, knowledge ambiguity is here exemplified by the 'what' of the KM project design, consisting of a unilateral, top-down definition of key concepts and assumptions. On the other hand, knowledge distribution is shown by the 'how' of the KM project design, in this case an extremely biased reliance on external consultants.

Also, the disruptive nature of knowledge was ignored from the moment that people with very packed working agendas and many responsibilities were assigned. Beta's HR manager and the SCM head had to 'squeeze' a new assignment within their already-busy schedules. Moreover, these people had quite different leadership styles, were accustomed to different work methods, and their responsibilities were of a different nature. So, the 'mix' resulting from this pseudo KM-project team was not really synergistic. In this sense, the head of SCM was a typically 'participative' leader, a good listener, who encouraged creativity, and also had no trouble in expressing very overly his views on many issues – including the KM project – even if they were different from those of other managers – including Beta's HR manager. On the other hand, Beta's HR manager had a much narrower scope to intervene in organizational processes; this person had a very clear goal regarding the KM project: promote by all means, at all levels, the acceptance and use of the new KM tool. This person appeared rather uncritical, quite 'robot-like' in her views and opinions (her definition of knowledge and KM was exactly the same as the one stated by the external consultants) and was extremely zealous of disclosing too 'confidential' information (she regarded a poster with simplistic but consultancy-attractive definitions of knowledge and KM as material of this kind). Given these differences it is unlikely that this pair could ever be truly effective. Albeit there was no open conflict, necessary cooperation was suboptimal because of the underlying sharp differences in their respective ways of construing KM itself in general and the role of the KM tool in particular. So: what does all this have to do with the disruptive nature of knowledge? The point is that, before the introduction of the KM project, the HR manager and the head of SCM had their spheres of influence clearly established – and kept separate. Mutual respect, even operational cooperation, existed – and worked fine. However, the introduction of the KM project implied the need for *forced* closer cooperation that was disruptive. Moreover, this situation could damage their respective ambits of influence. For instance, on the one hand, the head of SCM could be perceived as a 'traitor' to his 'participative' image should he impose a KM tool without prior consultation with his team. On the other hand, the HR manager could seem to be inconsistent by her assistants and superiors should she mention any objections by SCM people.

Knowledge transfer within KM-project teams

There were no big problems in knowledge transfer within each of the KM-project teams, albeit for quite different reasons. At Alpha, there was good cohesion in the team. The CKO was given much freedom to create her own team and to define key concepts and procedures to develop the KM strategy, and was very careful when hiring people. Everyone in the KM-project team provided very close (complex and comprehensive) definitions of knowledge and KM – not identical since they had not simply 'memorized' them, but close enough to show underlying shared assumptions, values and goals. As a consequence, it appeared that in this context the distributed, ambiguous and disruptive nature of knowledge did not cause any serious problems for knowledge transfer within the KM-project team. Indeed, evidence indicates a keen awareness by everyone – especially by the CKO – about the existence of these features of knowledge, so they were taken into account to optimize the performance of the team. For instance, the distributed nature of knowledge was turned into an asset since regular meetings were held and everyone listened to each other. Also, the ambiguous nature of knowledge played a positive role since, within the limits imposed by the strategic KM-project goals – quite broad anyway – assumptions, objectives and methods could be challenged continuously. Hence the KM project increased its scope and complexity after achieving the basic goal of database integration. As for the disruptive nature of knowledge, daily work of people within the KM-project team was *ad-hoc* designed to achieve KM goals, which to a progressively greater extent were defined by the team members themselves; as a result, no disruptions appeared.

As for Beta, as we said above, knowledge transfer was not problematic either, but in this case not because knowledge-hindering issues were effectively dealt with, but because of the way the KM-team was created and the way its working dynamics were defined so that it did not demand knowledge transfer. In other words, Beta's HR manager and SCM head were not asked to engage in any kind of creative, knowledge-developing processes. Rather the opposite was the case: they were asked to work together, but just to operationalize the action lines very clearly established from above; that is, to persuade people across the organization to use the KM tool. All knowledge transfer concerned was a limited traffic of data and information involving figures and names, progress reports, etc., to increase mutual awareness of the situation in the other

team member's domain and to be, after report 'mechanical' consolidation if appropriate, handed over to top management. Therefore, once it had been made crystal-clear that corporate top management *commands and defines* and the KM-project team *obeys and accepts*, there is no point in discussing the difficulties posed by the distributed, ambiguous and disruptive nature of knowledge. In other words, senior management was so dominant in the prior stages of KM-project design and KM-team creation that they had irreversibly affected the following steps of knowledge dynamics within the KM-project team.

Knowledge transfer from KM-project teams to the rest of the organization

In this section, we are going to focus on the effectiveness of the processes involving the application of the 'lessons learned' by the KM-project team to the rest of the organization. Therefore, the better such 'lessons' are applied, the more effectively are people across the organization willing to accept and, hopefully, get involved in the use and contribution to the KM tools and procedures, according to the operational requirements of the KM projects. Certainly, as a consequence of the differing outcomes of the creation of the KM-project teams, and then the differences in the knowledge transfer dynamics within these teams, the situation regarding knowledge transfer from the KM-project teams to the rest of the organization was obviously different in Alpha and Beta. However, conversely to the previous analyses, here the situation at Alpha ceased to be so 'idyllic', and at the same time the situation at Beta was not either so disastrous – at least from a limited technical point of view.

Generally speaking, the KM project at Alpha was quite well accepted by everyone, especially in its first stage when the top priority was database consolidation. Afterwards, the KM project, whilst acquiring a dominating position in the corporate intranet, started to include more ambitious goals, such as creating a corporate 'yellow-page' directory of experts, or the creation of software applications aimed at collecting details of problems encountered in projects and solutions applied. At first, people were informed of the need to contribute to the new KM tools and people reacted mostly in a positive way – 'if it's good for the organization it's good for me and my career'. But this positive 'macro perspective' started to show some flaws from a more micro, individual point of view. For example, sharing knowledge about project

drawbacks/solutions could, after all, mean undermining one's career prospects. This is a crude example of the disruptive nature of knowledge from a 'knowledge is power' point of view. In other words, knowledge transfer is hindered because its transfer would imply a serious loss in the power status of someone (a person or a group) who is not ready to accept such a loss and self-prejudice.

Another form of disruption was found, in both Alpha and Beta to varying degrees, when KM required important changes in behaviour, facing, at the same time, a strong organizational culture that opposed change or included embedded values and beliefs that contradict KM requirements. This is observed in Alpha when, in a culture dominated by personal achievement values, people are asked to become more cooperative. Although cooperation is intrinsically necessary in consultancy project teamwork, the formal introduction of new KM procedures goes beyond this *unavoidable* kind of cooperation towards a new kind of relatively *altruistic* cooperation. As the senior consultant interviewed said: 'we are asked to use the KM tools to introduce information about problems encountered and solutions adopted [in the context of consultancy projects], but this is a competitive environment and we are not given any compensation for doing this'. On top of this, another kind of knowledge-transfer disruption can be identified. As mentioned above, consultants at Alpha were asked to contribute to KM systems by sharing their experiences in their consultancy projects. However, a new obstacle appeared, related simply to the lack of time and the consideration of KM duties as something 'additional' to 'regular' work. In other words, new KM-related obligations were assigned to consultants, but their core, project workload remained intact. Therefore, in order to fulfil KM-related expectations, consultants would have to work more hours. Even discarding power and culture related disruptions, more basic task-related disruptions interfere with knowledge transfer: people cannot be obliged to perform additional tasks without a parallel reduction of the 'traditional' assignments, or at least an inclusion of the new KM-related assignments as an intrinsic part of their work – and therefore directly goal-linked tasks.

Power-related, culture-related and task-related disruptions were also evident at Beta. First, regarding task-related disruptions, the new KM tool basically consisted of a standard software application, operationally independent from the already existing corporate intranet – let alone related to any non-IT-based suggestion-systems, quality

circles, or other continuous improvement methods and tools already in place. This led to people across hierarchical levels and organizational units sharing a perception that the KM tool was, pure and simple, a waste of time – even of 'working for free'. As, quite sadly, the SCM trainee interviewed stated: 'I don't need the KM tool to achieve my goals, so why should I waste my time with it?'

This situation reinforced culture-related disruptions. Since Beta was a company with quite comprehensive continuous improvement systems – and, generally speaking, comprehensive and progressive HR practices from a soft viewpoint – its employees were conscious of the need of cutting costs, improving efficiency everywhere, were usually listened to for implementing changes for improvement, etc. Therefore, the 'sudden' implementation of a new KM tool, without prior consultation and, above all, a tool that did not add anything significant to existing tools and processes, was regarded by employees as a contradictory and confusing message. As the head of SCM acknowledged: 'people don't really understand why the KM was introduced […] many people believe that there is a hidden agenda by management'. In this situation, people believed that there were intentions from the top to increase control and to make people less indispensable. This ultimately eroded trust and, generally speaking, jeopardized the psychological contract with the company as the KM-tool was perceived as 'counter-cultural' and 'suspicious'.

As for power-related disruption, although the climate within Beta, according to interviewees' accounts, can be assessed as quite cooperative, the way the KM tool was designed and implemented propelled a defensive reaction. Previously trustful and cooperative people became distrustful and individualistic. In this scenario, requests to introduce 'knowledge units' into the KM system were interpreted as threatening their freedom and disrespectful of their commitment to the company. In short, an initially receptive context to knowledge transfer from a power point of view was jeopardized by a negatively synergistic effect of the two other kinds of disruptions (task-related and culture-related).

As for knowledge distribution and ambiguity, these issues posed just minor problems in Alpha. As said above, within the KM-project team, the potential negative effects of knowledge distribution and ambiguity were not only minimized, but also reversed into a positive situation, since the CKO was aware of such threats, promoted dialogue,

participation and critical thinking within the team. The careful selection of the KM-project members, with a CKO with extensive consulting experience and another member who was a part-time 'regular' consultant and part-time KM-team member, the high amount of freedom given to the KM-project team in the design of the KM systems, and the extensive and regular contacts between the KM-project team and line consultants, crafted a project environment that was sensitive to both the distributed and ambiguous nature of knowledge. Of course the negative effects of these features could not be fully neutralized, but at least they were keenly and sincerely attacked and, therefore, considerably reduced.

Conversely, Beta is a clear example of 'bad practice' regarding the way to deal with knowledge distribution and ambiguity in the context of promoting a new KM tool. The severe limitations of Beta's approach to KM design and KM-team creation are here amplified in the dynamics of transferring the project, already transformed into a ready-to-use tool, to the rest of the organization. Unsurprisingly, since the involvement of the potential users of the KM tool had been minimal during the design stage, the KM tool did not meet the real needs of those workers. This situation shows a clear lack of appreciation of the distributed nature of knowledge.

Moreover, Beta's corporate top management and the external consultants who designed the KM tool were, apparently, not aware that knowledge itself was extraordinarily ambiguous – and therefore were unaware of the perilous consequences of ignoring the ambiguity of knowledge. The very meaning of knowledge and KM, and thus the design of the KM tool, were almost unilaterally established by the external (IS/IT) 'experts'. The expertise of many in-house workers was neglected because they were not IS/IT experts. A declaration by the corporate head of SCM is revealing: 'Knowledge is managed quite effectively in our organization, although the official KM tool has nothing to do with it'.

DISCUSSION

In this section, data obtained are analyzed further to explore more deeply the research questions posited in the introduction. The first question was: 'do the design and implementation of KM projects sufficiently take into account the different processes of

learning?' From the case analysis the quick answer would be 'yes'; however, in order to tackle this question more deeply, we need to explore further the connections between knowledge-transfer hindering features and the learning cycle. The second question was: 'when KM projects do not fulfil the established goals, can any of the causes of failure be found in relation to (i) the neglect of any of the learning processes? (ii) the neglect of the complex dynamics of organizational learning processes?' The short answer is, again, 'yes', but we need to develop a more detailed analysis. Accordingly, emphasis will be also made on inquiring into the extent to which broader organizational learning processes are synergistic with the development of the KM. In other words, an additional research question appears now as a result of the case analysis itself: 'did the KM initiative pay off in terms of organizational learning enhancement?'

As explained previously, both Alpha's and Beta's **KM-project teams** were not comprised of a clearly defined group of people, committed FT to the project. However, there were important differences in their performance, both in terms of dealing internally with the development of the KM project, and also in terms of 'selling' the project to the rest of the organization. In this sense, despite being a rather ad-hoc group, Alpha's team was cohesive and the learning cycle was effectively propelled regarding the internal learning relationships among team members. Thus, Alpha's team started their work initially by engaging in reflective observation of the concrete experience in the company. That is, the team started their work by thinking about how to develop an IT-based system to integrate the thousands of existing dispersed databases, thus addressing a specific problem that Alpha was facing. Conversely, a specific kind of abstract conceptualization was imposed on the Beta team that did not really derive from reflective observation of Beta's concrete experience. It was derived instead from a rather unreflective decision by top management to apply a standard KM tool not well adapted to Beta's specific situation and requirements.

Considering these findings in relation to the learning cycle, in principle, the learning cycle (as conceptualized by Kolb) can be initiated at any of its four stages. However, the contrasting experiences of Alpha's and Beta's KM-project teams, suggests that under certain circumstances, some 'starting points' may be more appropriate than others. When a new KM initiative is introduced, it is assumed that there is a need for improving knowledge processes throughout the organization. Often, this assumption fosters the

creation of KM 'tools' that are aimed at facilitating the transfer of knowledge across the organization. Even with this (admittedly very simplistic) view of KM in mind, common-sense tells us that, in order to design a tool that improves our practices involving knowledge transfer within the organization, one should first diagnose the current situation of such practices – so that the new KM tool fits the specific needs of the organization and is appropriately synergistic with idiosyncratic knowledge processes. In Kolb's (1984) terms this reflects the importance of concrete experiences as a trigger to learning.

Therefore, it seems logical to assume that an effective learning cycle in the specific context of KM-project design should begin by gaining experience and understanding about the current organizational knowledge creating and sharing processes and then reflecting upon such observations. The dynamics of the KM-project team at Alpha were quite consistent with this situation. In Beta, the project team had started with abstract conceptualizations (e.g. the very definitions of knowledge and KM) that had to be taken for granted by the members of the KM project team, and then, without any serious reflection upon the actual organizational situation, they had to apply a set of procedures heavily based on these standard, externally-driven assumptions. That is, active experimentation followed a rather 'distorted' kind of abstract conceptualization, one where concepts are not shaped by the actual practices, structures and idiosyncrasies – as would be required by a functional learning cycle – but one that has been 'introduced' from outside. Thus, there was a push from the top (and the outside) to 'squeeze in' something fashionable and even 'posh', but not really aligned with the organizational conditions and needs. As a result, we find clear support for the disruption created in the knowledge-transfer dynamics because of the (ineffective) initiation of the learning-cycle within Beta's KM-project team.

Therefore, we can conclude that the care taken by top managers, who design the composition and assignment for a KM-project team, in dealing with the distributed, ambiguous and disruptive nature of knowledge is positively related to the effectiveness of the initiation of the learning cycle within the KM-project team.

Regarding **knowledge transfer within each of the KM-project teams**, it worked quite differently in Alpha and Beta. As explained above, utmost care was taken by all team members in Alpha to address any potential threats posed by the distributed, ambiguous

and disruptive nature of knowledge. As a result, knowledge transfer worked smoothly within the team, and this translated into an effective learning cycle. For instance, faced with the challenge of database integration, all team members observed what databases consultants were using for their daily work, and assessed which ones were related to specific work requirements. Team members would gather together to share these experiences, and engage in a process of collective reflection upon their findings. Team members would provide explanations for what was happening, think of potential ways of improving the situation, etc. As a result, abstract conceptualizations were made (e.g. definitions of knowledge and KM adapted to the specific needs in Alpha), and then these concepts would work as basic premises for developing technical and organizational architectures toward the goal of database integration, thus leading to active experimentation through new, more comprehensive databases being created, with some being removed and others consolidated, and all of them being placed together in the new 'KM system'. Certainly, the learning process does not finish here. New concrete experience (e.g. limitations of new databases or broader limitations of an IT-led KM approach) is what triggers new observational reflection, and so on. All in all, the evidence is quite clear that the better the attention paid to knowledge-transfer needs, the more smoothly the learning cycle is going to work within a KM-project team.

Conversely, knowledge-transfer hindering features were neglected within the team dynamics at Beta. However, since knowledge-transfer requirements were unambitious within the team, no big problems were either encountered; it was rather a situation of 'sterility', rather than of 'hostility'. In any case, such a situation corresponds to a 'paralysis' in the learning-cycle: if there are no real knowledge-transfer requirements, none of the stages of the learning cycle are triggered. For instance, the awareness by a KM-project team member of someone refusing to use the KM tool provides a concrete experience, but such experiences end up in a 'cul de sac': no further reflection is made on this situation because of the underlying premise of the KM project, 'whoever opposes the KM tool is wrong'. Also, these experiences are not shared in a search for 'second opinions'; rather the opposite: problems are denied so they do not even get to exist – an attitude diametrically opposed to learning.

As a result, we can conclude that the care taken by the KM-team members – and especially by the team leader – to deal with the distributed, ambiguous and disruptive

nature of knowledge when they develop their assignments as a team, is positively related to the effectiveness of the learning cycle within the KM-project team.

As for **knowledge transfer from the KM-project team to the rest of the organization**, the analysis in the previous section showed that, since more people are involved in the KM project at this stage (basically as *users* of the KM system), both the dynamics of the learning cycle and the impact of the knowledge-transfer hindering features become more complex.

A way to assess the effectiveness of the transfer of 'lessons learned' from the KM-project team to the rest of the organization is the willingness of potential users to utilize the new KM tools, both in terms of exploration and exploitation. Therefore, it can be assumed that the more successful such exploration and exploitation dynamics are, the more effectively the learning cycle has, apparently, been 'bypassed' – in terms of KM-systems deployment. At Alpha, exploitation was relatively more successful than exploration, especially in the first stages of the KM systems deployment when consultants found their access to corporate databases substantially improved. As for exploration, this was where the main obstacles were found, especially in the subsequent stages of the KM project, when keen cooperation by consultants was required to 'fill up' the KM systems. The influence of the various knowledge-hindering features was notorious in the limited success of this explorative side of the KM project. However, knowledge ambiguity and distribution had a lesser impact than knowledge disruptiveness. This makes sense, since differences in mindsets (ambiguity) and unawareness of others work (distribution) are relatively well managed in the typical professional service organization where, on the one hand, corporate culture is usually strong – which minimizes the effects of knowledge ambiguity – and, on the other, consultants change teams and assignments often and communication channels are well managed – thus minimizing the impact of knowledge distribution.

At Beta, prior neglecting of the ambiguity and distribution of knowledge truncated any expectation of effective transfer of lessons learned from the KM-project team to the rest of the organization – thus jeopardizing efforts both to introduce and to retrieve 'knowledge units' . Any lessons learned would have been meagre, limited to the most technical procedures for using the KM tool, by no means linked either to true

knowledge transfer processes, just achieving limited 'commitment' – albeit to varying degrees – in the *use* of the tool.

Consequently, it can be stated that, from an exploitation perspective, the care put in by the KM-team members to deal with the distributed and ambiguous nature of knowledge when they develop their assignments as a team, is positively related to the effectiveness of knowledge transfer from the team to the rest of the organization. On the other hand, prior neglect of the distributed and ambiguous nature of knowledge by people strategically and operationally responsible for the KM project leads to a fulfilment of the negative potential that such features have on commitment in the KM project across the organization.

Continuing with the exploration side of Alpha's KM system commitment from consultants, the disruptive nature of knowledge was more problematic than the other two knowledge features. The case analysis evidenced three different causes for the 'straight-jackets' that made people reluctant to share their knowledge, namely: power-related disruptions, culture-related disruptions and task-related disruptions. Certainly, the key trigger that provokes a defensive response is threat to one's status/power. However, such a trigger may be mediated by three rather different mechanisms. The most straightforward one is power itself, that is, the fear of losing power by making others knowledgeable in formerly private cognitive domains. Such fear of losing power or, more broadly, of losing control of one's role and destiny in the organization, can be also propelled by subtler mechanisms, depending on the extent to which organizational culture or job descriptions impact on the development of the fears above mentioned.

Culture-related and (purely) power-related disruptions, although with similar consequences, originate from different causes. Purely power-related disruption is *directly* provoked by the threat that a worker perceives in transferring their personal knowledge to other people. In culture-related disruption, knowledge transfer is prevented by the very values and beliefs that are embedded within organizational culture and that the individual applies when judging the appropriateness of transferring their knowledge to other people. In other words, power-related disruption is individually-pushed, whereas culture-related disruption is organizationally-pushed. Of course, if the two kinds of 'pushes' work in the same direction, the final effect is reinforced – as happened in Alpha.

Task-related disruption originates in the lack of time and/or formal inclusion of KM duties into 'regular' work assignments. Thus, the basic physical/technical constraints to KM commitment, may eventually lead to the fear that involvement with KM would imply neglecting 'true' work. KM-project people in Alpha were perfectly aware of this situation, but solving it was a task that went beyond their decision power: other units and managers would need to be involved if a genuine way of integrating KM into everyday work was to be found. At the time of data collection, negotiations between the CKO and the corporate head of human resources had begun, focusing on a redefinition of jobs (to include KM-related tasks), personal objectives (to include knowledge sharing as part of goal achievement), etc. Awareness of difficulties existed – a good sign; the outcomes of this new, 'mine-plagued' learning cycle are yet to be assessed.

In Beta, KM-system related exploration dynamics were especially affected by the disruptive nature of knowledge. As explained, a 'vicious circle' was triggered at Beta, where task-related disruptions synergized with culture-related ones. It was perceived as a contradiction that people were *commanded* to do something (introducing 'knowledge units') in a way that contradicted the participation-friendly cultural values, a situation worsened by the fact that the KM tool was, in principle, aimed at fostering participation itself. Power related disruption is then reinforced by the other two, when these contradictions trigger suspicion and a dramatic drop in trust toward top management and people in the KM-project team.

Consequently, we can conclude that there are three types of causes for the negative impact that the disruptive nature of knowledge has on knowledge transfer, namely (purely) power-related, culture-related and task-related causes. They are especially dangerous in the context of knowledge exploration, and even more difficult to manage in this context than the ambiguous and distributed features of knowledge. Also, prior neglect of these latter issues poses irreversible obstacles for addressing the disruptive nature of knowledge.

Last, but not least, regarding the **impact of KM projects on broader organizational learning**, KM systems were quite well integrated into Alpha's organizational intranet, so it became quite helpful for meeting knowledge transfer demands for consultants' daily work. The impact of the distributed, ambiguous and disruptive nature of knowledge works here in a similar way to the one described above when analyzing the

transfer of the lessons learned from the KM-project team to the rest of the organization. That is, knowledge transfer will be easier or more difficult to the extent that the different characteristics of knowledge are accounted for.

Of course, many knowledge transfer processes escaped the 'net' of KM systems; indeed, Alpha's KM-project team were extremely aware that fostering organizational learning, from a broad perspective, requires far more than IT. In this sense, the overall assessment is that the extension of KM systems across the organization did facilitate knowledge transfer processes and, therefore, propelled the different elements of the learning cycle. However, this improvement in organizational learning was just 'the tip of the iceberg'. This moderately positive assessment was overly stated by the CKO, who also recognized the long way yet to run. But the next steps are beyond the single responsibilities of a CKO who has been granted very limited authority on non-IT issues. In fact, despite the fact that 'traditional' HR practices were well-secured in other managers' 'ivory-towers' and thus remained largely untouched, the CKO was able to solve the complex jigsaw of involving people in KM tasks within a sometimes quite knowledge-transfer unfriendly environment, and even to accomplish some moderately successful attempts to trigger culture change. Definitely, the CKO wants more, but further synergy between organizational learning and a reshaped KM *strategy* (beyond KM *systems*) remains to be assessed in the future.

The impact of the KM system on organizational learning was quite different in Beta. As already mentioned, the KM project became a rather simplistic software application, aimed at capturing 'knowledge units', storing them, and retrieving them later by whoever might need them. The eagerness of people to contribute to this system was, at first, very limited, due to the severe obstacles posed by the distributed, ambiguous and disruptive nature of knowledge to the transfer of the lessons learned about the KM system from the KM-project team to the rest of the organization. However, top corporate management realized that few were contributing to the KM system so, at the time of data collection, measures were being studied in order to promote such a contribution. However, Beta's corporate and local heads of operations expressed concerns about the introduction of financial incentives. The corporate head of operations said: 'We [operations and SCM people] already have our own section in the corporate intranet, so we will go on using it for actual knowledge transfer, but people

shall also have to use the official KM tool if they want to be rewarded.' The local operations manager, with a closer picture of the shopfloor dynamics, was even more explicit: 'This is a perversion of the [KM] system: yes, sure that people will use the system if they get financially rewarded for it, but they will do it only for that, definitely they do not believe in KM' (note the latter use of the expression 'KM' as a synonym of 'the KM tool', an interesting sign of the perverse effect that a poor approach to 'formal KM' through an IT-led tool can have on subjective constructions of the KM concept itself). In fact, even before financial incentives were to be introduced, some people had already been keen contributors to the KM system. The corporate head of operations explains the situation: 'People were asked to introduce knowledge units into the system. Therefore, people who wanted to show their commitment eagerly introduced what they thought to be knowledge units, but most of times what was introduced was just rubbish, useless data. […] People did not inform about actual problems and actual solutions to them in our organization, not at all… people literally transcribed what they had found in some book… without any apparent connection with a specific need of someone in our company […] These data are not knowledge units'. While 'knowledge units' needed prior validation by pre-assigned 'validators', these people faced a terrible paradox: on the one hand, they had to prevent informational trash from entering the system, but at the same time they had to meet (unofficial but relevant) targets in KM system contributions, targets assessed basically in a simplistic quantitative way. The result: an absurd competition among organizational units to appear as the most committed to the KM project – and thus gain the blessings from corporate top management.

Being asked about knowledge transfer and learning processes, all four interviewees in Beta operations and SCM agreed that communication was very fluent within and between these units, with regular meetings held among their heads, a comprehensive section of the intranet carefully maintained, etc. Asked about an explanation of the general dynamics of 'best practice' or 'lessons learned' transfer, the corporate head of operations responded: 'Well, if you are involved in some project and face a problem, you think that someone, somewhere else in Spain might have had some experience with a similar situation. What we usually do is to check the comprehensive databases, fora, etc. that exist within the intranet; we also would pick up the phone and contact some peer who is assigned somewhere else in Spain and ask them directly. Your closest colleagues with experience in other places throughout Spain might also help you out.

Actually, there are lots of ways, many of them really informal, through which knowledge circulates around'. In other words, knowledge was effectively managed but outside the new KM tool.

Thus it appears that the increase in the contribution to Beta's KM tool not only is irrelevant in terms of organizational learning, but it is also negative in terms of efficiency (e.g. people were often duplicating the task of data inputting, first into the intranet and then into the KM tool) and included mainly useless data that were not exploited since there were few 'knowledge unit' retrievals by third parties. This is a dysfunctional and unsustainable situation: 'knowledge units' are stored in a KM system, but nobody retrieves them later – because nobody cares, because people find what they need somewhere else, and also because 'knowledge units' are often informational trash.

As a result, we can conclude that the effectiveness of (i) the initiation of the learning cycle within a KM-project learning team, (ii) the overall learning cycle dynamics within a KM-project team, and (iii) the effectiveness of knowledge transfer from the KM-project team to the rest of the organization, are positively related to broader organizational learning. Besides, both the more a KM-project is strictly focused on IT, and also the effectiveness of pre-existing organizational learning processes formally unrelated to the KM project, the lower the potential of this project for fostering organizational learning.

CONCLUSION

In this paper, the connection between KM projects and the learning cycle has been explored through two contrasting experiences of Spanish organizations. Case analysis has evidenced the extreme complexity of such connections, mediated by a complicated net of organizational variables. The basic conclusion is that great care needs to be put in the whole process of KM project development. From the very initial design of the new KM systems, to the formation of the KM-project team(s), the assignment of responsibilities to such team(s), the awareness of organizational requirements and constraints that will shape the above issues, and especially the awareness of pre-existing organizational learning processes and the potential interactions between them and the

KM systems being introduced – all of it ideally aiming at a synergy between KM-systems deployment and broader organizational learning.

Moreover, we have identified a number of knowledge-hindering characteristics of knowledge: distribution (difficulty to know what others know, are doing or may need from us), ambiguity (differences in underlying assumptions and mindsets) and disruptiveness (potential loss of power). Also, as an original contribution of this paper, three different causes have emerged as mediating variables for the disruptive effects of knowledge through the fear of status/role degradation because of knowledge sharing (power itself, culture and task design), causes that add to the ones associated to the other two knowledge-hindering features.

Certainly, the process of exploring our initial research questions, rather than providing easy answers, leads us to formulate further questions. What are the key organizational facilitators and constraints that shape how best to tackle the different knowledge-hindering features in the context of KM-project teams? Under what organizational conditions is the creation of a new KM unit necessary in order to propel an effective learning cycle within the KM-project team? What is the connection between the key trigger for the KM project – including the potential role of 'fashion' – in the development of a KM project and the way to tackle the different knowledge-hindering features of knowledge? What are the 'key points' that need the most careful attention by management in the process of learning cycle 'amplification' from the first idea of a KM project to the fostering of organizational learning?

In order to tackle the above – and other – questions, further research is needed. Starting from the conclusions of this paper, further analysis of the available data would certainly be helpful. Besides, follow-up data collection in the same case companies could be interesting to offer a more dynamic and comprehensive view of the evolution of both KM strategies. Another line of future inquiry would be to refine prior theory with the explorations made in this investigation, so specific analytical frameworks are developed which take into account, under a dynamic, interactive perspective, on the one hand, the learning cycle and knowledge-hindering features of knowledge and, on the other, the whole process of KM project deployment.

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