

# Knowledge creation for innovation in a virtual environment

Sandra Sieber<sup>a</sup>,  
Rafael Andreu

<sup>a</sup> Information Systems Department  
IESE Business School, Spain  
{sieber, andreu}@iese.edu

## Abstract

In this paper we report an experiment carried out in a large Spanish savings bank with over 22000 employees and more than 4400 branches to test the feasibility of knowledge creation in a virtual environment, aiming at the participation of as many employees as possible. This paper explores how a specific organizational initiative, based on setting up a virtual environment that facilitates participation, was instrumental to get an increasing number of employees participate in a firm-wide innovation effort, geared at the production of innovative ideas with the goal of improving the firm competitiveness in today's ever demanding environment. Interesting observations were made that allow a better understanding of how creative processes develop in such an environment, in contrast with their counterparts in traditional face-to-face synchronous settings.

**Keywords:** Innovation; knowledge creation; case study

**Suggested track:** Q (Practitioner's Track) or B (Knowledge creation and innovation)

## 1 Introduction: Innovation, knowledge and virtual environments

Innovation and knowledge have both considered to be at the core of dynamic organizational capabilities (Teece & Pisano, 1994), and therefore as a fundamental source for building and sustaining competitive advantages (Leonard-Barton, 1995; Nonaka & Takeuchi, 1995). In the sense of Bob Metcalfe's (1999) definition that "invention is a flower, innovation is a weed", Amidon (1993) considers that innovation must be conceived from a systemic point of view, focusing on the flow of knowledge and learning. Even more, innovations do not result from flashes of brilliance by lone inventors or organizations, but are really about creatively recombining ideas, people, and objects in new ways (Hargadon, 2003). In this whole process, knowledge has been seen as a critical resource (Drucker, 1993), as knowledge is created

and hold by a whole range of sources within an organization, innovation will depend critically on the organization's ability to bring together, capture, integrate and deploy knowledge from these diverse sources (Brown & Duguid, 2002). In small organizations, this is typically taking place through informal networks and communications. However, in larger organizations barriers to knowledge flows exist. Often, large organizations in fast changing industries are threatened by new entrants with more flexible structures (Loudon, 2001). Therefore, it is necessary to overcome some of these knowledge flow barriers, encouraging relationships among different individuals, groups and organizational divisions, and engaging in experiments (Thomke, 2003) in order to enhance the overall innovation ability of a large organization.

Different organizational forms have been suggested to manage innovation in an optimal way. Christensen and Overdorf (2000) favour spin-offs or joint ventures, in order to keep innovative talent separated from the culture, organizational restrictions and inertias of established companies, while Tushman and O'Reilly (1997) recommend the establishment of ambidextrous organizations, defined as firms or business units within firms that support different competencies, structures, cultures, and processes.

The problem with both types of solutions is that very often incumbent companies are not in a position of engaging into the deep changes that are associated with either solution, and hence need to take some preliminary steps to build a more innovative culture and thinking within an organization. In this situation, some less radical changes that have been implemented are those of adopting some sort of so-called "knowledge management solutions" to encourage more innovation with a given organization. While some of them are technology driven, others are led by the human resource department or even through a specifically created innovation unit.

In this vein, IS has been considered to be a fundamental driver in any knowledge intensive or innovative organization, in which information management systems (Ruggles, 1999) aim at moving and using information from across the organization, forming what has been coined by Bill Gates

(1999) as the “digital nervous system”. On the other hand, from a social theory perspective, communities of practice (Wenger, 1998) focus on the essentially social and situated nature of any learning effort (Brown & Duguid, 2001), in which individual identities and context shape the different meanings of any knowledge. Finally, a third research stream has taken an intermediate stance, focussing on the possibilities and limitations of virtual teams, electronically linked individuals which may know or not know each other before, but who through information and communication technologies are linked together to work on any specific assignment (Griffith, Sawyer & Neale, 2003).

In this paper, we will report the initiative carried out by a large Spanish savings bank, which after the establishment of a formal innovation unit decided to take advantage of the dispersed knowledge of their employees in the branches to enhance the overall innovativeness of the organization. After some preliminary months of a twofold nature of work, (1) the establishment of the initial technological platform as part of the saving bank’s intranet, and (2) company-wide initiatives geared at making employees aware of the existence of the innovation unit, the group decided to launch a new initiative: the “online creativity workshop”. This consisted in a virtual environment for which it was instrumental to get an increasing number of employees to participate in a firm-wide innovation effort, geared at the production of innovative ideas with the goal of improving the firm competitiveness in today’s ever demanding environment. Interesting observations were made that allow a better understanding of how creative processes develop in such an environment, in contrast with their counterparts in traditional, face-to-face synchronous settings. As we show, despite the success of the initiative, some lessons can be drawn regarding differences between face-to-face and virtual initiatives of knowledge creation.

## **2 Challenges for knowledge creation and innovation in virtual teams**

Even though virtual teams have widely been acknowledged as a way of allowing distant workers to work together, research has also shown that they are confronted to diverse challenges. Although many of these problems arise from the fact of being co-located, some additional problems have arisen due to the dependence upon collaborative technology and the establishment of

common ground (Grant, 1996; Majchrzak, Rice, Malhotra, King, & Ba, 2000). Although, the use of an emergent and malleable collaborative technology may lead to enhanced communication within the group (Majchrzak et al., 2000), issues of trust (Jarvenpaa, Knoll, & Leidner, 1998), collaboration and leadership may be magnified due to communication and distance problems (Jassawalla & Sashittal, 1999) or governance issues (Duarte & Tennant-Snyder, 1999). Further, the organization may have constraints of time and financial resources that inhibit knowledge sharing and communication (Neece, 2002). Therefore, when establishing virtual teams for innovation and knowledge creation purposes, different things should be taken into account: (1) Organizational support and purpose, (2) the importance of establishing an egalitarian structure, while still maintaining active leadership, (3) team culture, especially taking care of trust and collaboration issues, and (4) involved people, their skills and knowledge, and their motivations and rewards.

*Organizational support and purpose.* As Katzenbach & Smith (1999) show, creative virtual teams work better under conditions of ambiguity and are inherently non-hierarchical. They do not prosper in a hierarchical structure, but need support from a corporate “patron” (Lipman-Blumen, 1999), which shields the group from the hierarchy, thereby encouraging lateral communications.

*Egalitarian structure, but importance of leadership.* Most theorists have proposed that the structure of a virtual team should be egalitarian in order to provide a more fertile ground for innovative thinking and for open knowledge sharing. As a consequence, critical competencies of virtual team leaders include mentoring and coaching, as well as technological skills and encouraging the use of technological tools. In addition, they should be good networkers which are able to build trust and to manage cross-cultural team members. Very often virtual teams develop some structures of shared leadership, in which team members take up a spontaneous leadership role at critical junctures of the project (Duarte & Tennant-Snyder, 1999).

*Team culture: trust and collaboration.* As in any team, the establishment of a right team culture is of crucial importance to the success of any team initiative.

In virtual teams the frequency and quality of communication (Cyert & Goodman, 1997) deserve special attention. Integration is critical to the success of projects, and often results in a decrease in project completion time (Hoopes & Postrel, 1999). Trust is an issue that has been found to be of major importance in virtual teams. The virtual-team context eliminates certain forms of social control such as direct supervision, face-to-face contact during meetings, and close proximity for monitoring work progress (Jarvenpaa, Kroll & Leidner, 1998). Trust, under this loose form of governance, promotes open and substantive information exchange, increases the influence of communication, and improves confidence in the relationship (Earley, 1986). Thus, trust can reduce transaction costs in the group interrelationships.

*People: skills, knowledge, motivation and rewards.* Virtual teams allow for a combination of people with very diverse skills, expertise, knowledge and capabilities, selecting from the best people regardless of their geographic location. Access to previously unavailable expertise, enhanced learning, enhanced cross-cultural understanding, increased knowledge transfer, reuse and cross-functional/cross-domain interaction all add to the benefits for the firm (Townsend & DeMarie, 1998). Nevertheless, the organization will only be able to benefit from all these opportunities if the involved individuals decide to cooperatively work on the team assignment, which will depend in great extent of their motivation and rewards, which in the absence of a clear hierarchical structure may be often very difficult to manage, as individuals often work on virtual teams on a project basis, while their internal promotion and career depend on their performance at their “normal” workplace.

### **3 Overall context: innovation and knowledge creation in the financial industry**

In the financial industry innovation and knowledge creation are being seen more and more as key to achieving sustainable competitive advantages. Faced with rapidly changing markets and deregulations, most commercial banks are increasingly relying on new product development for growth and profitability. Especially small banks have shown sometimes surprising creativity in their intents to bring new service offerings to the market.

In this way, personalized services have moved to the center of the value propositions of a variety of banks. An example is the American Umpqua bank, which is leading a movement that has been followed by other banks (like Bank of America) of branch transformation, moving from the traditional efficiency-oriented conception of branches toward a more boutique-style concept, inviting their clients to stay, relax, have a coffee, surf the Internet, or even read in the branch-owned library corner. "What if we felt like home?" was their latest advertising line, trying to express the bank's move towards personalization. In a similar way, Virginia's Towne bank turned one of its liabilities –the lack of enough capital to grow multiple branched- into a customer-friendly asset. Founder Bob Aston invested in a fleet of 400 Volkswagen Beetles, creating a "bank-on-wheels" that nowadays average 400 deliveries a day to pick up deposits and offer all sorts of services.

Some banks have even gone further, introducing completely new business models as a way of reacting to changing environmental and technological conditions. In this sense, ING direct has entered a variety of countries with a pure online banking strategy, breaking some of the business fundamentals of the traditional banking industry: no branches, very narrow product offering, no possibilities of transferring money to other ING Group-owned banks, zero commissions for almost all transactions. As a result, in five years of existence in the Spanish market it has managed to capture €8.000 million in assets, attracting about 800.000 new clients. Similarly, other banks, such as Bankinter in Spain have decided to "internetize" their business model, completely reorienting the bank towards Internet banking.

Most of these banks have conceived innovation as a part of the day-to-day work of their employees, adopting an extremely focused approach on targeting very specific population segments. Innovative activities and ideas are encouraged through a highly innovative culture, regular contact with clients at all levels of the organization, idea contests within the firm, continuous analysis of competitors' activities, or the existence of multifunctional teams to ensure and energize internal knowledge flows.

#### **4 The case study: Online creativity workshops in a large Spanish savings bank**

As a consequence of an explicit recognition of the importance of encouraging innovation as a way of achieving new value propositions, one large Spanish savings bank decided to formally create an innovation division at the beginning of 2004. Eleven employees were transferred from other parts of the organization, although most of them came from the IS group, which was going through a moment of restructuring. At the executive board level, one director was given the explicit responsibility, of getting the group going, with emphasis on fostering cross-fertilization with other divisions.

After several months of mostly internal work, in Spring 2004, the innovation group launched an innovation portal on its intranet, mainly to start having some internal visibility within the organization. Frequent visits to branch offices and territorial divisions accompanied the launch of the portal, as the group was hoping to “wake-up” the innovative spirit of the organization. In this way, the group engaged into intensive communication activities, with the specific goal of contributing to establish a more innovative culture. As the head of the innovation unit said,

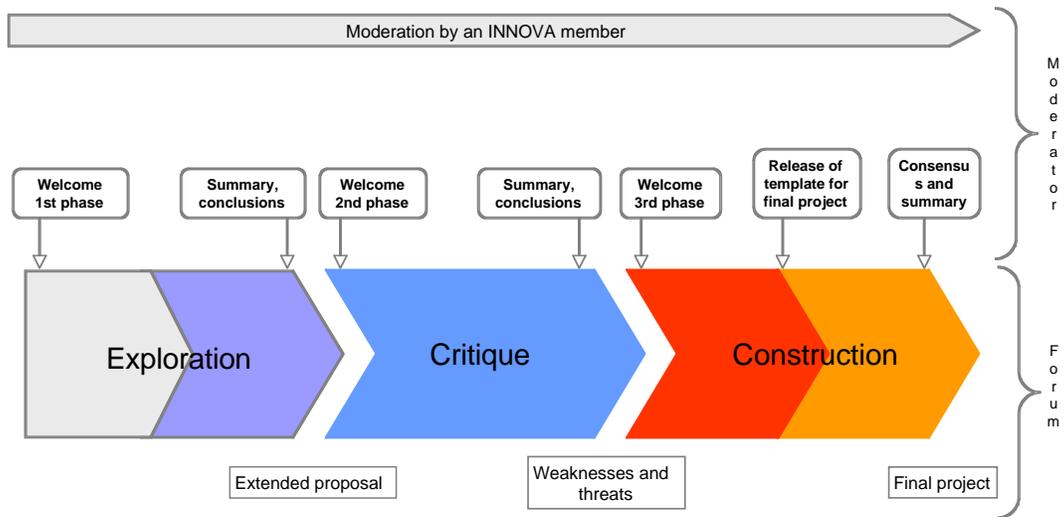
“We have more than 22.000 employees, and I am sure that if we are able to get them engaged and motivated, we will produce much more innovation momentum and ideas than just through a stable core of 10 or 16 thinking persons. Therefore, I consider that it is of up-most importance to establish some effective communication ways with our people at the branches. I know that technology has some limitations but, given the limited amount of resources currently at our disposal, we should seize any opportunity to get the ball rolling”.

Hence, with the twofold objective of enhancing a more innovative culture in general, and of generating good ideas that could offer new business opportunities for the different banking specialties, the portal was set up with different sections, from general innovation topics to concrete innovations in the banking industry. The portal was also conceived to encourage people to take initiative in a variety of ways: a non-moderated forum where anybody could

propose discussion topics, a mailbox for idea submission, and a monthly newsletter to which employees could subscribe.

After just a few months, all these initiatives were producing some results. The number of visits was steadily growing, employees were interested in the newsletter, and participation in the forum was judged excellent. By summer 2004 almost 3000 of the 4400 branches were accessing the INNOVA site, while more than 6000 different users were visiting it. In addition, the INNOVA community was growing, and by the end of June 178 employees had become part of the INNOVA group by formally signing up to it. Over 110 innovation proposals had been received, and 158 topics had been discussed in the forum.

In this context of increasing interest, the innovation group decided to start a knowledge creation initiative to capitalize on recent successes, and be able to offer the first elaborated innovative ideas to the business areas. In words of the Innovation Director, "it was time to create new projects that the business units might find attractive and want to implement". The goal was to get as many people involved as possible, as the innovation manager believed that most of the innovative potential of the organization resides precisely in those people that are in close contact with the clients, and which traditionally had been neglected (in terms of innovative resources) by the headquarter. For this purpose, it was decided to set up the "online creativity workshop", a moderated forum in which good ideas could be explored, debated, criticized, and refined. To achieve this, a three step methodology was used. This methodology was masterminded by two university professors, who adapted a well-working, in-class knowledge creation methodology for small groups, to the virtual environment. After selecting two ideas that had been previously submitted in an "ideas mailbox" of the INNOVA intranet site, these ideas were submitted to a process of exploration, critique and reconstruction, as shown in figure 1.



**Fig. 1** Overall process of the “online creativity workshop”

Each of the phases had a duration of two weeks, in order to allow enough time for participation of employees who all had their normal workload to cover, and were free to participate on an entirely voluntary basis. It was thought that more than two weeks would lengthen the overall process in excess.

In the first phase, of exploration, each idea was further explored and defined during two weeks, during which participants were encouraged by the moderator to enhance the initially posted idea, adopting a constructive mentality. The goal was to end this phase of the overall process with an as rich idea as possible. During the next phase, of critique, participants were invited to make an in-depth analysis of any threat of weakness of the enlarged idea, in order to make sure that all eventual problems were “on the board” after two more weeks. Participants were not allowed to find solutions, but had to focus exclusively on possible problems. Once finalized this phase, during the last phase, of reconstruction, all possible problems and flaws identified during the previous step were taking into account, and the initial idea was then reconstructed into what was considered to be a viable final project. This was then presented by the innovation group to the business unit in charge, who had to decide whether to adopt it or not.

For confidentiality reasons, we cannot report at this moment any information about the concrete ideas that were worked out, although the results are very

promising. After having done two rounds of ideas, three of the four ideas that were discussed in the “online creativity workshop” have been evaluated as very positive by the business units, and are today in a process of being implemented.

## **5 Discussion of results and preliminary conclusions**

In general, the process of the “online creativity workshop” was considered to be satisfactory, as employees showed sufficient interest, feedback was mostly positive, and the results seemed to have enough implementation potential. Nevertheless, the online process had some problems, and some interesting particularities vis-à-vis previous offline experiences could be observed.

First, participation was much more thoughtful and less spontaneous, for which general participation was slightly lower than anticipated. Second, people did not very actively participate in the last stage, of reconstruction, which was interpreted as a consequence of the already were detailed postings in the first two phases, in which solutions were implicitly evident. Also, the process showed that moderation was not easy, as moderators did not want to interfere too much in the process, but participants seemed to look for guidance and leadership. Finally, motivational issues appeared, and the INNOVA group in charge of the moderation of the different ideas all considered that toward the end of the process employees did not find the motivation to continue participating.

More in general, problems with overall attention to the initiative existed, which can be seen more as a consequence of a general lack of attention toward innovation of the entire organization, rather than a lack of interest in concrete innovative activities. In this sense *organizational support and purpose* is still in the process of being built. The need for more innovation has been identified by the executive board, and explicitly stating “the need to become a more innovative organization” in the strategic plan of the organization, thereby creating the INNOVA group, and allocating resources to it. Nevertheless, as a traditional saving bank, and despite having a good innovation record, especially in terms of inclusion of technology-advanced services for the clients, innovation has never been embedded within the organizational culture. In this context,

despite the efforts of the INNOVA group to publicize themselves within the organization during the previous months, employees still were not very aware of their existence, and although visits to the site were increasing, the group still could not reach the majority of the organization. As the “online creativity workshop” was considered to be an interesting initiative, it was actually used to attract employees to the INNOVA intranet site, by placing banners inviting to participate online on both the homepage of the intranet and the employee portal, the most visited sites of the saving bank’s intranet. Nevertheless, the overall impact of any INNOVA initiative was still considered to be low, and the group considered that all their work during the first year had to have the explicit by-objective of building a more a more innovative culture.

Second, regarding the *egalitarian structure and leadership*, the results of the first two rounds of the online creativity workshop show that participants were expecting a more active and guiding role of the moderators, hence asking for clear leadership. In our vision, this is a consequence of the concrete moment in which the workshop was launched, as it is not only a tool to create and work out new ideas, but also a change agent geared toward the implementation of a more innovative context within the organization. As such, participation cannot be given for granted, and active moderation is essential to make the process interesting enough to create stickiness for participating employees, making sure that they find it rewarding for themselves to participate during the entire length of the discussion of any given idea.

Third, *trust and collaboration* are still an issue. As anonymous participation is not possible, as every employee is locked into the system with full information about her profile, collaboration is more difficult, as barriers to post opinions and messages exist. Some people seem to fear offline retaliation, or may think that their opinions, not being experts in the given are may be inappropriate. We think again that this issue can only be resolved in the long run, making people aware that every participation is important, and that more participation may immensely enrich overall results.

Finally, regarding *skills, knowledge, motivation and rewards*, we have observed that the overall process benefits from the fact that non-business related employees participate, as they indeed bring fresh and new ideas and points of view to the process. Nevertheless, especially in the reconstruction phase, it is probably useful to count with concrete experts. This is especially true for those ideas in which technical or regulatory issues may be important. Motivation and rewards are more problematic. As all participation is voluntary and employees tend to have a pretty loaded work schedule, their devoted time to the workshop is very limited, and actually there is no reward beyond personal satisfaction, credit for participation on the refinement of ideas in the final project proposal, and a big “thank you” from the INNOVA group. After the first two rounds of ideas, all participants received a small gift, but in any case this can be considered as a career path impacting activity for any employee at this moment.

Within this context, and taking into account the learnings of the first two rounds of ideas, the innovation group has recently decided to engage into the next round of their online activities. First, it has been decided to push forward the “online creativity workshop”. This means devoting more efforts to systematically launch them, not only in a slightly changed online format, but also to carry out offline workshops inviting participants of multiple functions to discuss specific ideas in one-day workshops. Regarding the online redesign, it was decided to go for a more active moderation while at the same time encouraging people from the business lines to start participating in the early stages of idea development process. In this way, leadership of the INNOVA group members was thought to be more visible, and hopefully overall interest could be encouraged and improved. In addition, by actively involving the business units, the importance of innovation in general is stressed. Finally, in order to make sure that the final part of reconstruction gets enough attention, the group is seeking consensus about the ideas to be discussed with the involved business units, who are now also in charge of leading the final part of the process, as it is considered that they have motivation enough to make sure a thorough reconstruction process. With all these activities going into its second big phase,

the saving bank hopes to move forward in getting innovation embedded into the organization.

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