INNOVATION THROUGH VIRTUAL COMMUNITIES OF PRACTICE: MOTIVATION AND CONSTRAINTS IN THE KNOWLEDGE-CREATION PROCESS

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ABSTRACT
Communities of Practice (CoP) are places which provide a sound basis for organizational learning, enabling knowledge creation and acquisition, thereby improving organizational performance, leveraging innovation and consequently increasing competitiveness. Virtual Communities
Virtual Communities of Practice (VCoP) can perform a central role in promoting communication and collaboration between members who are dispersed in both time and space. The ongoing case study, described here, aims to identify both the motivations and the constraints that members of an organization experience when taking part in the knowledge creating and sharing processes of the VCoP to which they belong. Based on a literature review, we have identified several factors that influence such processes; they are used to analyze the results of interviews carried out in this study of three multinationals.

**Keywords:** Virtual Communities of Practice, knowledge creation, knowledge transfer, innovation in organizations.

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**Résumé**

Les Communautés de Pratique Virtuelles (VCoP) peuvent jouer un rôle central dans le développement de la communication et de la collaboration entre les membres qui sont dispersés dans l’espace et dans le temps. L’étude de cas en cours, décrite ici, vise à identifier les motivations et les contraintes que les membres d’une organisation connaissent quand ils prennent part aux processus de création et de partage de connaissance dans la VCoP à laquelle ils appartiennent. En nous basant sur une revue de littérature, nous avons identifié plusieurs facteurs qui influencent de tels processus ; ils sont utilisés pour analyser les résultats des interviews réalisés dans cette étude de trois multinationales.

**Mots clés :** Communautés de Pratique Virtuelles, création de connaissance, transfert de connaissance, innovation dans les organisations.

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**Resumen**

Las Comunidades de Práctica Virtuales (VCoP) pueden tener un papel central en el desarrollo de la comunicación y en la colaboración entre los miembros que están repartidos en el espacio y en el tiempo. El estudio de caso que se describe aquí, tiene como objeto identificar las motivaciones y las restricciones que los miembros de una organización conocen cuando participan en los procesos de creación y comparten el conocimiento en la VCoP a la cual pertenecen. Basándonos en un análisis de la bibliografía, hemos identificado varios factores que influyen en este proceso; estos factores son utilizados para analizar los resultados de las entrevistas realizadas en el marco de este estudio de tres multinacionales.
INTRODUCTION

With accelerated market volatility, faster response times and increased globalization, business environments are going through a major transformation and firms have intensified their search for strategies which can give them competitive advantage. This requires that companies continuously differentiate their products: that is, firms must constantly innovate. Innovation consists of new ideas that have been transformed or implemented as products, processes or services, generating value for the firm (Popadiuk and Choo, 2006: 309).

With such a demand for new ideas, it is often the case that not one individual can satisfy this. Often, individuals, when performing knowledge intensive tasks or faced with new problems, rely on informal relationships and engage in interactions to reduce uncertainty, generate ideas and create and use new knowledge. These informally established groups of self-organized individuals, working on similar problems, help each other to broaden their knowledge base and share perspectives about their work practices; this often results in the learning and innovation environment that has been labelled as a Community of Practice (CoP). In the context of this paper, we are concerned with Virtual Communities of Practice (VCoP), which are those in which their members use ICT as their primary mode of interaction (Dubé et al., 2006: 147).

This paper is organized as follows: the next section, drawing on a literature review, synthesizes both the motivations and the constraints that members of an organization experience when taking part in the knowledge creating processes of the VCoPs to which they belong; the third section describes an ongoing case study, taking place in Portugal, in order to identify these experiences. It details the methodology used and presents the results of the interviews with members of the VCoPs within three multinationals. Results are also discussed. Finally, some conclusions on this research are drawn.

VIRTUAL COMMUNITIES OF PRACTICE: MOTIVATIONS AND CONSTRAINTS IN THE KNOWLEDGE CREATION PROCESS

Knowledge creation in VCoP is conditioned by several factors that can motivate or constrain this process. These can be individual (e.g., intrinsic factors) or collective (e.g., extrinsic factors related to the community), organizational (e.g., cultural and structural) or technological (e.g., user-friendly systems) as explained in the following paragraphs:
Individual:
- Intrinsic factors (Soft) – Members get involved in acts of knowledge creation motivated by factors related to their personality, the satisfaction they feel by sharing their knowledge with others (Deci, 1975; Krogh and Grand, 2002);
- Extrinsic factors (Hard) – Financial rewards, direct or indirect for sharing or creating knowledge (Hall, 2001; Hall and Graham, 2004). If members consider the cost/benefit relationship positive, they will get involved in these processes, otherwise they will stop sharing (Kelly and Thibaut, 1978). These factors are considered as short term motivations (Sharratt and Usoro, 2003: 191), and are important to attract new members to the community, but in the medium and long term they provoke more problems than benefits (Hall and Graham, 2004);

Collective – Factors related to the context in which the group operates. For instance, if the group to which the members belong (organization or CoP) does not allow the development of feelings of trust (Roberts, 2006), they tend not to share their knowledge and are afraid of asking questions (Krogh and Grand, 2002);

Organizational culture – The involvement of workers in the process of knowledge development is conditioned by cultural factors (Davenport and Prusak, 2003), a culture that motivates and rewards knowledge sharing, creates advantageous conditions for the development of knowledge creation. Values, language and common frameworks (Davenport and Prusak, 2003; Sharratt and Usoro, 2003) or “opportunity structures” can provide a fertile environment inside the community (Krogh and Grand, 2002). A shared vision and well-chosen organizational objectives also influence this process, because they promote a feeling of involvement with the organization and a willingness to contribute within the workforce (Kim and Lee, 2005);

Organizational structure – Organizational structures influence the sharing attitudes of collaborators (Kim and Lee, 2005) which, in turn, influence knowledge creation. Chung (2001) believes that bureaucratic and centralized organizational structures tend to constrain knowledge creation, while more flexible and decentralized ones tend to motivate knowledge sharing, especially as regards tacit knowledge, because it allows a higher level of interaction between members;

Technological factors – Among the constraint factors associated with technology, the values related with non-verbal language (e.g., cues, rituals), so essential to tacit
knowledge sharing, are lost (Krogh and Grand, 2002). This constraint is offset to some extent by the ease of access afforded by information technology, increasing the possibilities of communicating and collaborating to resolve problems, while also allowing access to more information (Sharratt and Usoro, 2003). These aspects of technology can thus be considered as motivating or constraining knowledge creation in virtual environments. Technology should therefore allow members to socialize, be easy to use (user friendly) and offer an assessment of the “health” of the community (e.g., number of registered members, number of active members, number of knowledge artifacts and their production dates) (Preece and Maloney-Krichmar, 2003: 25).

THE CASE STUDY

Methodological approach

The research design uses a case study approach (Benbasat et al., 1987; Eisenhardt, 1989; Saunders et al., 2003: 93; Yin, 2003); to increase the scientific rigor, a multiple case study was developed for three organizations, each one with several “case units”, i.e. in each two or three VCoPs are analyzed (Benbasat et al., 1987; Yin, 2003). In such circumstances, it is possible to obtain enough data to promote intra- and inter-organizational analysis and in this way increase the study’s relevance.

This is an exploratory study; its aim is to explore the concepts, causes and facts, which determine people’s attitudes. It takes a qualitative approach to the collection and analysis of data (Creswell, 2003: 212-15; Flick, 2005: 271). The process of gathering data occurred in two phases:

Phase A – Comprised the non-structured interviews (Creswell, 2003; Flick, 2005; Ghiglione and Matalon, 2005: 105; Miles and Huberman, 1994; Saunders et al., 2003: 248) involving the leaders of VCoPs, with the objective to refine the theoretical model developed from the literature review, with the application of a questionnaire. This also served to characterize the VCoP under study (Dubé et al., 2006);

Phase B – Comprised the semi-structured interviews (Creswell, 2003: 212; Flick, 2005; Ghiglione and Matalon, 2005: 105; Miles and Huberman, 1994; Saunders et al., 2003: 248; Zafeiriou et al., 2001: 86). Its framework was developed using the theoretical model of the previous phase and involved the members of the VCoP (Barañano, 2004: 93) Its objective was to verify the framework, as it related to the motivations and constraints felt by the members.
In Phase A, interviews were conducted via e-mail, since we were not able to arrange interviews face-to-face; according to the literature, this does not compromise the results of the study (Foster, 1994: 1286; Jansen et al., 2007; Mariampolski, 2001; Meho, 2006: 1285; Sheehan and McMillan, 1999). We interviewed 7 people in this phase.

Data from Phase B was gathered by both face-to-face interviews and through instant messaging. The first method was preferred because it allowed personal contact. The second was necessary to accommodate the timetables of the interviewees; again, this does not compromise the study (Fontes and O’Mahony, 2008: 2, 4; Mann and Stewart, 2000).

In the next paragraphs, we present and discuss some of the major results. First, motivating factors are presented; these are then followed by the constraining ones.

**Data analysis and discussion of results**

Data were gathered in three multinationals of the IT sector. These organizations were chosen as knowledge-based organizations (Engwall and Kipping, 2002; Maister, 1993).

In the organizations under study, we identified several types of VCoP:

1. **Strategic communities** – The objective is the creation of competitive advantages and innovation. The members of these communities usually assume tasks at the highest level, or they are those, in the organization, considered to be experts in the domain. Normally, they also belong to operational communities in the field, where they perform their activities. They correspond to the epistemic communities presented by Amin and Roberts (2008), and Cohendet and Llerena (2003);

2. **Operational communities** of professionals that assume tasks at an intermediary level (e.g., communities of project managers or sales people). These kinds of communities usually have the objective to develop knowledge (to improve the performance of collaborators) and the creation of competitive advantages and innovation (taking as a starting point, the knowledge created in the community);

3. **Operational communities with a more technical interest** (e.g., a community of software development professionals) with the objective to improve the performance of collaborators;

4. **Operational communities with interest in activity sectors, as distinct from professional areas.** They can be found in the commercial sector and their objective is to develop knowledge on how the activity sector, to which they belong, acts and works (e.g., communities for the government sector or big enterprises);
5. **Ad hoc communities** that emerge naturally from the requirements of the organizational collaborators; for instance, when a new technology or a new professional interest emerges spontaneously. Some of these communities evolve to become operational communities or even strategic communities, while others disappear when the knowledge domain of the VCoP is no longer important.

**Motivating factors**

The results suggest some interesting conclusions. None of the interviewees referred to direct extrinsic factors, such as financial rewards, as an issue to encourage people to actively participate in the VCoP. Also, none of them referred to organizational structure as a key issue, although one of the interviewees mentioned aspects concerning organizational culture as a potential factor which might cause the reuse of existing artifacts, rather than seeking new ways of doing things:

"**Individuals are strongly encouraged to reuse all kinds of work artifacts, maybe even more than they are encouraged to contribute.**"

(interview D)

There is also a generalized tendency to consider that success and even professional survival depend on membership of these communities. Individuals are also motivated by the fact that the VCoP allows access to a huge amount of information and knowledge, which might be denied in other circumstances. This information and/or knowledge might be the key for the success of the individual or organization. Some interviewees consider these communities as "**the basis of knowledge in our distributed world**" (interview D).

One of the interviewees established a direct connection between the VCoPs and innovation, stating that these communities constitute a fundamental resource:

"**But the true value comes from adapting what’s available and using it to really innovate. This is not the most common use of these resources, but I think it is the one that makes a difference. By doing this, individuals can make the most of what the community has to offer.**"

(interview D)

**Constraining factors**

The most important factors designated as a barrier to active participation in the community, in order to contribute, use and create knowledge, are the lack of time for these activities and the difficulty to reconcile them with the daily professional stress situation. One of the interviewees also highlighted the fear of losing his/her job and the position he/she occupies in the hierarchy as a key issue preventing members from sharing what they know. However, this person also said that this feeling belongs more to the past rather than to the present. This means that something in the organization is changing; this might be generated in the VCoPs or even in the way people now see the importance of knowledge sharing to the survival of the organization, to keep the job and the development of an idea.
“The only thing that I can think of is protecting one’s position by retaining knowledge in a particular aspect. In fact, I think I never experienced such a position from any of the people I work with, but I have seen it a couple of times in a distant past. Could be part of a normal change resistance process that has now ended.”

(interview D)

Some constraints have also been identified, in aspects concerning culture and organizational issues that limit the sharing, reuse and creation of knowledge in the communities. One of them concerns lack of recognition, when sharing and making available information and knowledge. However, this problem has only been pointed out in one of the organizations studied. Another constraint relates to the lack of knowledge concerning the existence of communities of practice in the organization.

In terms of intangible factors, interviewees said that there is a natural human tendency to use existing knowledge artifacts since “using” new ones takes extra time and effort. This category only emerged in data gathered from the interviewees; it does not appear in the literature. These issues concern the learning and innovation process. Members see these processes as consuming additional time and resources; not all of them want to make this investment:

“There’s a natural tendency for just using what’s available, to transform it and innovate takes time and additional effort.”

(interview D)

Another barrier relates to the characteristics of each member; readiness to learn will vary from person to person:

“It takes time to learn, and not everybody will be able to do it at the same level.”

(interview D)

Some cultural differences and literacy difficulties, due to the fact that all members do not have the same mother language, have also been pointed out. The communication among collaborators throughout the world is affected by cultural differences (e.g., expressions that are used in a certain country and that can be misunderstood or not understood at all by persons of other countries) and mother tongue. This can give rise to a breakdown in communication.

Another issue concerns the existence of a large number of knowledge artifacts with little or no relevance to the work of members.

The technological aspects have been widely referred as constraints preventing an active involvement in the community. Within this category there are the problems related to the difficulty of access to the community; this manifests itself in slow response times; poor web design, the lack of tools to extract information efficiently, and tools that are difficult to use and that are not adequate for the requirements of the knowledge sharing process. These factors are so important that one of the interviewees considers that technological limitations are the only constraint to knowledge sharing:
CONCLUSIONS AND RECOMMENDATIONS

The results of this research have already identified three critical issues, when organizations try to take advantage of the full potential of Virtual Communities of Practice as an information source and as a privileged place of knowledge creation and innovation:

1. In spite of the investment in and availability of the communities, organizations seem not to be ready yet to profit from one of their main assets – innovation – and through it, the creation and generation of collective advantages. Interviewees mention the lack of a sharing and collaborative culture in the process of knowledge creation. Motivation only concerns the reuse of knowledge artifacts, efficiency and productivity and not the creation of innovative ideas;

2. Due to the lack of a clear relationship between cost and benefits in active participation in the community, interviewees see the lack of time as a big constraining factor;

3. Technological factors are also mentioned as significant barriers to the process of knowledge creation.

As for factors that motivate members to participate, the recognition of the community as a knowledge source, giving ready access to experts and encouraging professional development, is very important.

It is recommended that organizations promote the role of VCoPs as sources of innovation which create competitive advantage by developing a culture where knowledge sharing and reuse of information are recognized and valued.

REFERENCES


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