Innovation through Virtual Communities of Practice: motivation and constraints in the knowledge-creation process

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Abstract: Communities of Practice are places which provide a sound basis for organizational learning, enabling knowledge creation and acquisition thus improving organizational performance, leveraging innovation and consequently increasing competitively. Virtual Communities of Practice (VCoP's) 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 processes of the VCoP's to which they belong. Based on a literature review, we have identified several factors that influence such processes; they will be used to analyse the results of interviews carried out with the leaders of VCoP's in four multinationals. As future work, a questionnaire will be developed and administered to the other members of these VCoP's

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

I. 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 (Popadiouk and Choo, 2006: 309).
With such a demand for new ideas, it is often the case that no 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 labeled 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*., 2005:147).
This paper is organized as follows: the next section, drawing on a literature review, synthesises both the motivations and the constraints that members of an organization experience when taking part in the knowledge creating processes of the VCoP's 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 four multinationals. Results are also discussed. Finally, some conclusions on this research topic are drawn.

II. Virtual Communities of Practice: motivations and constraints in the knowledge creation process

Knowledge creation in VCoPs 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, p.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 e 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, influences 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 interaction between members.
- Technological factors – Among the constraint factors associated with technology, the values associated with non-verbal language (*e.g*. cues, rituals) so essential to tacit knowledge sharing, is 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, p.25).

III. The case study

Methodological approach

The research design uses a case study approach (Benbasat *et al.*, 1987; Eisenhardt, 1989; Saunders *et al.*, 2003, p. 93; Yin, 2003); to increase the scientific rigour a multiple case study was developed for four organizations each one with several "case units", *i.e* in each two or three VCoP are analysed (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 is a qualitative and quantitative approach, to collect and analyse data (Creswell, 2003, p.212, 215; Flick, 2005, p.271). The process begins in the qualitative phase, using semi-structured interviews, followed by a quantitative stage – using a questionnaire as research tool - in which statistical evidence is obtained to validate the hypothesis formulated in the interview stage (Ghiglione and Matalon, 2005, p. 105).
In the present paper only the data collected in the qualitative approach are included. As such, the data presented here are provisional, but already relevant to an understanding of the motivations and constraints in the knowledge-creation process within VCoPs.

Data analysis and discussion of results

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

Motivating factors

Results show 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 depends 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 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 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.

> "*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.
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, tools that are difficult to use and that are not adequate to the requirements of the knowledge sharing process. These factors are so important that one of the interviewees considers that the technological limitations are the only constraint to knowledge sharing:

> "*For me, at a personal level in terms of willing to share, there are no barriers, just lack of tools / systems allowing keeping and gathering knowledge in an easy way while ensuring that it is always updated (the personal contact with other members is not always possible, efficient and effective)*" (interview F)

IV. 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 their value – 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) maybe 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 is recognized and valued.

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