

Virtual Communities of Practice: Explaining Different Effects in Two Organizational Contexts

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Abstract: This paper presents results from a study on virtual communities of practice (CoPs) in Canada and highlights the main consequences of these new modes of communication, work organization, and knowledge creation through two case studies,¹ which are analyzed in detail. The two case studies reveal the different effects observed and offer possible explanations for the variations in the results. Several factors explain the success of one community of practice and the relative difficulties involved in the other. In the first case, the participants were all volunteers and showed high levels of engagement and motivation to attain their objectives. In the second case, the participants were appointed and their project was somewhat more diffuse; the CoP experienced a turnover in leadership, contributing to a lesser degree of motivation and little interest in communicating with each other as a means of creating knowledge. This analysis contributes to organizational literature by highlighting some organizational conditions that lead to different effects in “virtual,” or telecommuting, communities of practice.

Résumé : Cet article présente les résultats d’une recherche sur les communautés de pratique virtuelles au Canada, et met en évidence les principales conséquences de tels modes de communication, d’organisation du travail et de création de connaissances, à partir de deux études de cas étudiées en détail. Les deux cas étudiés ici permettent de mettre en évidence les effets différents observés et quelques facteurs susceptibles d’expliquer les différences. Les principaux facteurs qui expliquent le succès d’une CoP et les difficultés vécues par la seconde sont les suivants. Dans le premier cas, tous les participants étaient totalement volontaires, ce qui a suscité une motivation et un engagement plus élevés, ce qui s’est traduit par une meilleure atteinte des objectifs. Dans le deuxième cas, les participants ont été désignés et leur projet était relativement plus diffus. De plus, l’animateur a changé au fil du temps, ce qui a réduit la motivation et l’intérêt des participants à échanger entre eux pour développer des connaissances. Notre analyse identifie des facteurs organisationnels qui contribuent à des impacts différenciés dans les communautés de pratique virtuelles, fondées sur la communication à distance.

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Introduction

Interest in various forms of participation in the workplace and in their impact on individuals and organizations has increased over recent years. Teamwork, collaborative work, and learning have attracted much attention. Much of this interest stems from the benefits that organizations can expect from collaboration and communication between workers in terms of innovation, productivity, and so on. Knowledge management has also attracted interest in recent years, partly on the basis of these expected benefits from better management of knowledge within organizations. More recently, the concept of communities of practice (CoPs) has been put forward as a form of knowledge management that paves the way to the attainment of various organizational objectives: productivity, quality, innovation, et cetera. (Jacob, Bareil, Bourhis, Dubé, & Tremblay, 2003).

In this paper, I will present a case study of virtual communities of practice, that is, communities of practice that use information technologies to enable members to work at a distance from a centralized workplace. I will start with a short review of teamwork and collaboration issues, leading into the analysis, which centres on two virtual communities of practice, in the Canadian health care and finance sectors.

Teamwork and collaboration

Teamwork is a flexible concept that can be adapted to many organizational contexts. Its conceptual diversity is due not only to different theoretical approaches to the study of groups in organizations, but also to the different societal contexts that transform, to some extent, the theoretical model (Roy, 1999; Tremblay & Rolland, 1998). Moreover, teamwork's polysemy stems from the fact that this term is used to describe diverse realities and, in particular, teams functioning at different hierarchical levels within organizations. We could add CoPs to this diversity of configuration, since their objectives are often similar to those of teamwork.

In the late 1970s, interest in teams became identified with the "quality of worklife" movement, which favoured the transformation of the workplace through labour-management co-operation and the creation of semi-autonomous groups of production workers. Individual satisfaction and organizational advantage were objectives of this configuration of work, as is sometimes the case with communities of practice. It should be pointed out that even if the management, operation, and social relations within the work team are far from homogeneous, many authors agree about the core elements of team-based work organization. These include the assertion that to make up a team, members must have (a) task interdependency; (b) shared responsibilities; (c) team identity; and (d) the power to manage the relationship between the team and the organization. These elements are interesting dimensions by which to define teamwork and, in my view, could be transposed to CoP experiments and other forms of collaborative work based on communication between team members.

Teamwork allows members to achieve a level of multitasking, to communicate and share information, and to be more responsible for quality and productivity. Teamwork also enables less rigid and disciplinary supervision. Workers grouped into teams are, in principle, given the incentive to manage their own units, in addition to accomplishing their work. For some researchers, teamwork is the optimal form of task and responsibility reconfiguration, since it allows for an extension of responsibility that is both horizontal (workers execute more tasks at the same level) and vertical (workers are responsible for more tasks that were previously managed by other hierarchical levels, that is, foremen and supervisors).

Social tasks include the exercise of leadership, training, health and safety programs, the definition of communication channels, and team meetings. These tasks have a decisive influence on the quality of work life within the team and enable a concrete expression of the values shared by its members. They also help develop trust among members, including the team leader. Autonomy should increase over time, depending on the evolution and maturity of the team, the dynamics of the relationships between teams, and the rules of the collective agreement. All this can surely be considered useful for the analysis of CoPs, since they are also centred on communication, co-operation, and task interdependence.

Communities of practice

Communities of practice have raised interest from researchers in recent years. We will first define the concept of a CoP and highlight some of the effects and expected benefits of CoPs as identified by other researchers. Secondly, we will present results from the Canadian financial and health care sectors, describing the individual and organizational advantages and disadvantages found in two communities of practice. Although the term “communities of practice” was first used by Wenger in 1991, it was made popular in more recent works by McDermott (1999a; 1999b; 1999c; 2000), Wenger, McDermott, & Snyder (2002), and Wenger & Snyder (2000). Many different views and definitions have been presented since, but most refer to the importance of sharing information within a small group and the value of informal learning for a group, as well as for an organization as a whole. In this sense scholarship regarding CoPs bears a similarity to the teamwork literature.

Mitchell (2002) offers the following definitions of CoPs:

- “Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” and
- “A group whose members regularly engage in sharing and learning based on their common interests” (p. 12).

The main elements stressed in all work on CoPs are the sharing of a concern and a set of problems, the ongoing interaction and communication between the group, and the ongoing sharing and learning (Mitchell, 2002; McDermott, 1999a; 1999b; 1999c; 2000; Wenger, McDermott, & Snyder, 2002; Wenger & Snyder, 2000), bearing again some similarity to the teamwork literature.

The definitions above correspond to the type of communities involved in this study. Other definitions insist on an informal dimension that was absent from our case-study subjects. Indeed, conventional definitions of communities of practice refer to a more informal group, whereas the communities we studied were structured by an organization and were thus quite formal. Here are a few other definitions of CoPs, centred on the informal dimension:

- “Groups of people informally bound together by shared expertise and passion for a joint enterprise” (Wenger & Snyder, 2000, p. 139);
- “Informal clusters and networks of employees who work together—sharing knowledge, solving common problems and exchanging insights, stories and frustrations” (Mitchell, 2002, p. 18).

It must be mentioned that the communities we studied were not based on a previously existing informal group, nor were they necessarily composed of people who worked in the same workplace. They were working together from a distance or telecommuting in the context of the CoP, which is why we refer to them as “virtual,” despite the criticism this term has received. Over recent years, communities that use information technologies to enable them to work from a distance have been the object of increasing attention. It must be stressed that these communities of practice are more than simple teams working from a distance; in McDermott’s (1999a, 1999b, 1999c) definition, they are seen as a group that has a common mission or project with a common task and that must deliver a product based on the regular exchanges and information sharing within the group.

The distinction between a team and a community of practice is often blurred, as we observed in our case studies. However, unlike work teams, CoPs do not usually have a predetermined goal or schedule, nor do they tend to have clearly defined tasks or objectives centred on their work tasks. While CoPs often have a permanent nature, or at least have no clearly defined end, work teams are generally dispersed, according to plan in some cases, once the work objective has been attained. However, it has been observed that teams in the manufacturing sector are often maintained to collectively assume general work tasks (Tremblay & Rolland, 1998). Work teams often have a strong division of labour, whereas communities theoretically imply more direct co-operation and continuous communication between members (Mitchell, 2002).

As indicated in much of the literature on work teams as well as on communities of practice, working together as a group usually requires some preconditions, the main one appearing to be trust in other members of the group. This is all the more important in the context of CoPs, since members of the community are expected to share tacit knowledge, work from a distance, collectively construct new knowledge, and possibly develop new products or services (Adams & Freeman, 2000; Deloitte Research, 2001; Wenger & Snyder, 2000). It is because of this trust element that many authors recommend that virtual CoPs be developed on the basis of existing informal groups in which trust and value sharing is already in place. This is not often possible in firms, and so many virtual communities of

practice are designed without taking trust into account, as we will see. This constructed aspect represents an added challenge for CoPs.

In addition to trust, several other key points and factors are often stressed in CoP literature. These include the importance of the leader of the CoP, the interest and motivation of individuals to work together as a group, and the support received from the organization. Support in this sense is defined as the legitimization of the group by the immediate superior or higher levels of the organizational hierarchy, financial or non-monetary rewards for the participants, and so on (Wenger, McDermott, & Snyder, 2002). Available technology and technological support are mentioned, but research indicates that human resources and organizational challenges are more important and that technology plays a rather limited role in the success or failure of a CoP.

In a literature review, Mitchell (2002) indicates that CoPs are seen as capable of delivering the following benefits: informal dissemination of valuable information; improvements in productivity; fostering of innovation; and reinforcement of the strategic direction of the organization responsible for and supportive of the CoP. The latter is particularly important because the CoPs in the literature were usually groups developed within firms. However, our first case study is of a CoP in a professional association, which thus was not developed within a single employer organization. In this case, CoP participants came from different organizations, although they shared a professional identity, being part of the same professional association.

Case studies of two communities of practice

In an effort to assist organizations that wanted to develop this form of communication and knowledge management, the Centre francophone d'informatisation des organisations (CEFRIO) tried to set up a dozen communities of practice in these organizations in Quebec in 2001-2002. The case studies presented here examine two of these twelve CoPs, which are among the most interesting and on which we have the most detailed data; also, it should be mentioned that not all of the twelve CoPs were implemented in the end. Researchers in the CEFRIO project examined different dimensions of the communities: communications, technology, construction of knowledge, and finally organizational and human-resource management (the latter being my own object of analysis; see also Bourhis & Tremblay, 2004). Since there has been very little research on the actual implementation of CoPs, the objective here was to study the implementation, conditions of success, positive or negative effects of the communities on their respective organizations, and the interest in participation and level of satisfaction of the participants.

Methodology

The CEFRIO instituted communities of practice in organizations that volunteered to participate and that agreed to respond to eight anonymous, online questionnaires. The questionnaires were designed to gauge the participants' perceptions of the following dimensions of the CoP: the objectives of the organization in setting up a community; past work experience and past experiences with co-operation;

the CoP experiment itself; the objectives attained; and participant satisfaction; and, as well as a general evaluation (Tremblay, 2005a, 2005b). There were two questionnaires on organizational and human-resource-management dimensions: one at the beginning and the second after six months of participation. In addition to the questionnaires, focus groups were conducted with CoP leaders, and critical-incidents reports (track records of critical events within the CoPs) were drawn up in order to follow up more thoroughly on all cases.

The health care sector case we present here is particularly interesting because, in contrast to the majority of documented CoPs and to the financial-sector CoP presented in the second part of this paper, it did not involve participants from a single employer organization. It was based on a group of health care workers with specialties in heart health and heart disease who lived in different Canadian cities and who were in contact only through the Internet and e-mail. The organization responsible for the project is a professional association in the health care sector.

The second CoP presented was a community established in the financial sector—agriculture or forest financing, to be more precise. This community involved participants from a single employer organization, who sometimes met in person but generally were in contact through the Internet and e-mail.

Let us now turn to the detailed analysis of these two cases. We will look at the participants' evaluation of the attainment of the CoP objectives mentioned in the first part of the paper, and then we will examine the levels and causes of participant satisfaction or dissatisfaction in each of the two CoPs (see also Tremblay, 2005a, 2005b).

Attainment of objectives

In the health care sector case, the objective of the CoP was to develop a website for information on heart health and heart disease for the general public. The 21 participants, all of whom were female, agreed that this objective was attained. In the financial-sector case, the objectives were to exchange information and facilitate decision-making, which was not necessarily achieved, according to participants' evaluations. However, since various other benefits and objectives of communities of practice and teamwork were identified in the literature (McDermott, 1999a, 1999b, 1999c, 2000) we wanted to know to what extent these, too, were attained.

It is interesting to note that the sharing of information and knowledge came first in both CoPs' objectives, followed by experimentation with a new mode of problem resolution and better utilization of delocalized resources. On a more general note, respondents also believed that the virtual-community project promoted excellence and stimulated creativity and innovation at different levels in each of the two cases. There was a better perception of attainment of objectives in the health care sector CoP than in the forestry financing sector one (see Table 1). In fact, over 60% of respondents from the financing-sector case indicated that the CoP was not a success, although they agreed that it was somewhat useful to the employer.

Table 1: Level of attainment of objectives

Question: On a scale of 1 to 5, where 5 indicates the objective was fully attained, indicate to what extent, in your opinion, these objectives were attained in your community of practice.

	Average H	Average F
Fosters innovation (e.g., knowledge sharing in order to develop new ideas for better products, services, practices, processes)	4.14	3.38
Better relation with client (e.g., reduce response time)	3.64	3.38
Better quality (e.g., better reliability in service)	3.78	3.14
Fosters excellence (e.g., list of best practices)	4.19	3.44
Rationalization (reduce costs)	3.33	2.33
Fosters development of competencies	3.75	3.00
Efficiency (e.g., do more with less resources)	3.80	2.75
Facilitates exchange and sharing of information and knowledge	4.48	3.56
Experiments with a new approach to a problem	4.24	3.56
Better use of delocalized resources (e.g., other city, other region)	4.15	3.33
Reduces number of workers	2.83	1.00
Maximizes working time (e.g., increases productivity, reduces time wasted)	3.19	2.86
Reduces duplication (e.g., not re-inventing the wheel, no repetition)	3.94	3.14
Stimulates creativity	4.20	3.00
Fosters learning	4.33	3.50

Note: H = health care sector CoP; F = forestry financing sector CoP

Individual participation in the community

The health care workers had a very positive view of their participation in the community of practice. We wanted to know whether this participation was beneficial from a personal or a professional point of view, if participants felt they had learned from other members of the CoP, and to what extent they themselves contributed to the community of practice. This is important since literature on teamwork and group activities often indicates that a few leaders actually participate in the project while many others remain on the periphery, although many organizations want to foster knowledge development for all members of the CoP. In the case of a “virtual” CoP, where participants do not discuss matters face to face, it is all the more easy to just read messages without actively participating in the CoP. As seen in Table 2, the data did indicate a higher level of learning (with an average rating of 5.24 out of 7) and of professional and personal enrichment (5.95 and 6.10, respectively) for the health care sector CoP, compared with a lower reported level of contribution to the community (4.29). However, the focus-group study revealed that these health care respondents did not have easy access to—nor did they frequently use—computers in their work environment, and the data indicated

that their participation was usually outside of working hours. This made it more difficult for some to participate and feel comfortable in contributing to the group's project.

Table 2: Evaluation of various dimensions of participation

Question: On a scale from 1 to 7, where 7 indicates agreement with the statement, what is your overall evaluation of your participation in the CoP?

	Average H	Average F
I found my participation in the CoP personally enriching	6.10	4.44
I found my participation in the CoP professionally enriching	5.95	4.44
I personally contributed a lot to the CoP	4.29	4.44
I personally learned a lot from the CoP	5.24	3.78
I am personally very satisfied with my participation in the CoP	4.57	4.56
I would be interested in continuing to participate in the CoP	5.62	4.71

Note: H = health care sector CoP; F = forestry financing sector CoP

Despite these obstacles, there was a relatively high level of reported participation and high interest in continuing to participate in such a project (5.62). This is interesting, since to our knowledge, there has been no study of virtual communities in professional associations, and these results indicate a potential new area of application for CoPs, beyond individual firms. Clearly, the participants felt they learned a lot from the experience on both professional and personal levels, which is most certainly relevant to competence and knowledge development in professional associations. Only 3 respondents out of 21 said that they would not be interested in participating in a CoP again. The data on the drawbacks of participation presented below shed some light on the possible reasons for this response. Scores were much lower in the financing-sector CoP (also shown in Table 2), especially for personal and professional enrichment, although there was some interest in continuing to participate.

Dynamics of the group

Having worked previously on teamwork projects and having observed in the literature on both teamwork as well as communities of practice (Lesser & Everest, 2001; Lesser & Storck, 2001; Martensson, 2000; Mitchell, 2002; McDermott, 1999a; 1999b; 1999c) that trust is essential to participation in group activities, it appeared important to us to evaluate the relations within the group to understand if this issue of trust is as important in a virtual CoP.

Respondents indicated that positive relations and interaction within the group were maintained throughout the health care project, which lasted six months. As indicated in Table 3, information sharing increased, which is important since this is one of the main objectives of CoPs—perhaps even the top objective. To a slightly lesser extent, participants indicated that group cohesion and co-operation also increased over time; this observation is interesting since CoPs do not usually have a fixed time period, as this group did, and in this case cohesion developed

over a rather short period. However, we would probably need a longer timespan to evaluate whether the interest level might diminish over time and have a negative impact on information sharing and cohesion. There was a small indication of rivalries and tensions developing over time, although the majority of the participants did not hold this view.

Table 3: Evolution of group dynamics

Question: On a scale from 1 to 7, where 7 indicates agreement with the statement, what is your overall evaluation of your participation in the CoP?

	Average H	Average F
Information sharing increased over time	5.81	2.22
Co-operation between participants increased over time	5.47	2.33
Group cohesion increased over time	5.79	2.56
Rivalries increased over time	2.06	1.38
Tension increased over time	2.11	1.88

Note: H = health care sector CoP; F = forestry financing sector CoP

In the forestry financing sector CoP, group dynamics were evaluated as much less positive, as can also be seen in Table 3. All of the elements received lower ratings than was the case in the health care sector CoP; while information sharing, co-operation, and cohesion did not increase, neither did rivalries and tension. There seemed to be less interest overall in this CoP.

Satisfaction and sources of satisfaction and dissatisfaction

Here we will treat both cases separately, since the results are somewhat different and are related to organizational factors specific to each case. This leads to a discussion of the different effects of the same organizational forms in different contexts.

The health care-association group

The great majority (95%) of respondents in the health care-association CoP held a very positive (43%) or positive (52%) view of the CoP. Only 5% reported having a neutral view, and none indicated that they were left with a negative one. This is a very general statement, but Table 4 gives more detailed information on the elements that contributed to the satisfaction and dissatisfaction of participants in the CoP.

It is clear from the survey responses that most of the activities related to the community of practice were sources of satisfaction, which in turn seems to be related to communication, group work, and learning (quality of interaction, consensus-building, team spirit, et cetera). However, some participants expressed a slightly negative view of the learning dimensions, citing them as a source of dissatisfaction (perhaps these respondents felt they did not learn anything and were therefore dissatisfied). Peer pressure and stress are sometimes highlighted as neg-

ative aspects of teamwork, but these elements seem to have been rather infrequent and to have had little effect in the case of this CoP.

Table 4: Main sources of satisfaction and dissatisfaction

	Source of satisfaction*
Collaboration among members of the CoP	4.15
Usefulness of subjects for my daily work	4.10
Quality of exchanges between members of the CoP	4.10
Acquisition of new knowledge	4.05
Group work, team spirit	4.00
Capacity to develop consensus in teamwork	3.95
Learning new methods of work	3.90
Recognition of my competencies by my employer	3.90
Recognition of my participation by my employer	3.00
Recognition by peers in my employer organization	2.85
Recognition by peers elsewhere (not my employer)	2.89
Time I invested in CoP activities	2.86
Capacity of the group in specific-problem resolution	3.67
Level of stress	2.81
Competition between members of the CoP	2.81

* Scores from 1 to 5, where 5 indicates a high level of satisfaction.

** Scores from 1 to 5, where 5 indicates a high level of dissatisfaction.

The participants were also asked to evaluate specific elements that they may have found to be of interest during participation in a CoP. Here again, learning and exchange of information and knowledge were highlighted as main interests; creativity and innovation, as well as problem resolution, were close behind (see Table 5).

Table 5: Elements of interest of participation in the community

Question: On a scale of 1 to 5, where 5 indicates very interested, rate your personal level of interest in each of these elements of the CoP.

	Average
Innovation and creativity that I could exercise in the CoP	4.10
Exchange and sharing of information and knowledge in the CoP	4.24
Experimentation with new approaches in problem resolution in the CoP	4.00
Learning from others in the CoP	4.35

There were very few (generally under the 2.5 median mark) reported sources of dissatisfaction in the health care CoP, as shown in Table 6. The loss of personal time was the most frequent complaint, although still relatively infrequent (4 out of 21 responses cited this as a cause of dissatisfaction with the CoP). This can be explained by the fact that all participated outside of working hours, many doing so in the evening (13 out of 21, or 62%), and others on weekends (7 out of 21, or 33%). It must also be noted that most (19 out of 21) had to participate from home, which is not always easy or convenient, as some writings on working at home indicate (Felstead & Jewson, 2000).

Table 6: Drawbacks related to CoPs

Inconvenience	Frequency
Reduction in time affecting other professional tasks	2
Reduction in personal time	4
Overload in work or lack of time	2

The forestry financing sector group

The respondents in this CoP had a less positive view of their CoP than did their counterparts in the health care group. Of the 9 who responded (out of 11 participants in the CoP), almost 56% (5 of 9) indicated that they were neutral about their level of satisfaction with their participation; only 33% (3 of 9) said they were satisfied; and 11% (1 of 9) reported no satisfaction. When averaged, this gives a score of 4.56 out of 7. Since we did a case study and collected qualitative data beyond the survey data, we can offer an explanation for this apparently poor result. Participants were questioned as to sources of satisfaction and dissatisfaction in order to get a better picture of their views and try to explain their rather unenthusiastic view, which seems very different from our observations in the case of the health care CoP. The qualitative data indicated instability in the management and leadership of the CoP as the main source of dissatisfaction. We will discuss this in more detail later.

We observed that the participants were mainly satisfied with the usefulness of subjects for their daily work (average rating of 4.89 out of 7); the co-operation between members of the community (average of 4.67 out of 6); and finally the capacity of the group to resolve problems (average of 4.56 out of 7). Time and recognition of work in the community were sources of lower satisfaction (under 3 out of 7). Problem resolution and decision-making were at the centre of the objectives of the CoP, so it is not surprising to see that they were valued. It should also be mentioned that the participants had worked together previously: 8 out of 11 indicated that they knew other participants as colleagues, while 3 indicated that they knew them only a little. In theory, this previous knowledge should have made things easier and more satisfactory, since trust should already have existed. However, a colleague is not necessarily a trusted colleague, and perhaps one expects more from someone one already knows and whose opinions one already values. Our case study indicates that while these factors are important, the stability of the CoP

leadership, management's interest in the CoP, and recognition of the workers' participation are crucial to a CoP's success, and these seem to have been missing here.

We also asked participants to identify sources of dissatisfaction. The main sources of dissatisfaction were the fact that participants felt they did not get recognition from their peers (average rating of 4.2 out of 7). They also felt they did not get enough recognition from their employer (average of 4 out of 7). Finally, they were quite dissatisfied with the time they had to devote to CoP activities (average of 3.88 out of 7).

There were, however, conflicting reports about the relationship between recognition and satisfaction (see Table 7). Recognition was reported as a source of satisfaction for some and as a source of dissatisfaction for others. The data indicated that participants did not think their participation would be recognized in their annual performance evaluations. Respondents were somewhat more optimistic in terms of receiving recognition from their peers for what they had learned (3 out of 7).

Table 7: Recognition of participation in the community of practice

Question: On a scale of 1 to 7, where 7 indicates total agreement with the statement, rate the degree to which your participation in the CoP has been or will be recognized within your organization.

	Average F	Standard deviation
My participation in the CoP was or will be recognized in my performance evaluation	2.17	1.60
My participation in the CoP was or will be recognized in my career progression (promotion, et cetera)	1.60	0.89
My participation in the CoP was or will be recognized in my competence	2.40	1.14
What I learned in the CoP was or will be recognized by my peers	3.00	1.15

When asked to evaluate sources of dissatisfaction, 4 out of 9 respondents indicated that they did not feel they had adequate time to participate fully in the CoP. These respondents indicated that they spent an average of 42 minutes a week on the project, while 5 out of 9 indicated they devoted 60 minutes a week to CoP activities. It should be noted that although the health care-association members participated outside of working hours and also complained about having to do this work on top of their regular working hours, there was much more reported satisfaction in the health care CoP than in the forestry-financing one.

In the forestry financing sector CoP, the firm's management apparently insisted on the importance of the project. However, there was a great deal of turnover in the management and leadership involved in the CoP, and this seems to have had a negative effect on the CoP's success.² Respondents evaluated their participation in the CoP rather positively, indicating that they found it enriching from both a professional and personal point of view. They also indicated that they had

personally contributed significantly to the CoP, although they felt that they could have learned more from it. Generally, they indicated that they would be interested in continuing to participate in such initiatives, although the forestry-financing group expressed more overall dissatisfaction than did the health care-association group. In the case of the forestry-financing group, the participants had a less positive view of the CoP, mainly because of dissatisfaction due to time constraints, lack of recognition, and the sense that the CoP had not fully attained its objectives, as was also the case with the health care CoP.

One of the elements that can be put forward to explain the less positive results of the forestry-financing CoP is the fact that the participants did not volunteer for the project, but were appointed. There were also other organizational factors that may help to explain the respondents' assessment of the CoP: the downsizing of two departments into one just prior to the project launch and the instability that ensued from that organizational change. A few people had left the department and the CoP, and there had been some disagreement concerning financing decisions in the firm. Management had to intervene to ask participants to pay more attention to the project, and the number of discussion forums was reduced from 11 to 3, but the lack of enthusiasm was not overcome. With participants forced to participate in a CoP without recognition, the CoP suffered from the successive departures of two of the project leaders.

Effect and usefulness of the communities

The community of practice was seen as quite useful to the health care professional association, the organization responsible for the implementation of the CoP, rather than for the participants' employers, since the knowledge developed in the CoP was not yet being used in the work environment. It should also be noted that the CoP had a positive impact on the association work climate (see Table 8), but less so in the participants' individual work environments, since participants' employers were not directly involved in the project. In the forestry-financing CoP, the participants recognized the usefulness of the CoP, despite their opinion that the CoP project itself was not very successful.

Table 8: Effect and usefulness of the community

Question: What is your global evaluation of the CoP? Scores from 1 to 7, where 7 indicates that the respondent totally agrees with the proposition?

	Average H	Average F
The CoP was a success	6.19	3.38
Teamwork was very useful for my employer	3.61	4.43
Teamwork within the CoP had a positive effect on the working climate at my workplace	3.29	3.50

Note: H = health care sector CoP; F = forestry financing sector CoP

Conclusion

As we saw, most people participated in the CoPs quite actively, but some reported that they learned more than they contributed, indicating that there may have been a certain number of participants somewhat less involved than others. In the health care CoP, the fact that most did not work with computers and that they had to learn new software explains part of this. Despite these drawbacks, levels of participation and motivation were still quite high in this CoP. Participants in the health care group did share a common concern (sharing knowledge on heart diseases and health), and they collectively resolved a set of problems (getting information on the Web). There was quite constant communication, and participants in both CoPs felt there was a regular sharing of information and learning, especially in the health care case. The health care group saw itself as having a common mission, while this sharing of objectives and motivation was weaker in the forestry-financing case. As indicated in much of the literature on work teams and CoPs, working together as a group effectively requires some preconditions, mainly trust. It is because of this trust element that many authors recommend that virtual CoPs be developed on the basis of existing informal groups that share values and trust. In our studies, the participants who knew each other beforehand (forestry-financing CoP) did not perform as well as those who did not know each other (health care CoP), but it can be hypothesized that the sharing of professional values created sufficient trust and motivation for the health care CoP to go forward smoothly.

Among the organizational benefits identified as effects of CoPs, we make particular note of the following: the informal dissemination of valuable information, improvements in productivity, fostering of innovation, and the reinforcement of strategic direction (Mitchell, 2002). Our results clearly indicate success in terms of dissemination of information and fostering of innovation in the health care case, though much less in the forestry-financing CoP. Learning and sharing information and knowledge appear to be important and were attained in the health care case. This is largely due to the professional involvement of the health care workers and the trust that apparently existed between them. Learning and knowledge sharing were clearly less developed in the forestry-financing case, highlighting the fact that knowledge sharing cannot be imposed, nor can it be automatically produced. Participants have to attach importance and meaning to the tasks undertaken within the CoP to develop significant involvement in the project, and this may be more difficult to attain when participants are appointed to the CoP, rather than being fully voluntary.

As previously noted, while the literature would suggest that it is better to build a CoP on the basis of existing informal work groups, the case that had greater success and learning dynamics was composed of a group of individuals who did not previously know each other, while the one that had less success was formed by individuals in the same employer organization. This is contrary to what would be expected based on the literature. Support for the project by the professional organization that launched the health care CoP and the motivation and

involvement of participants largely compensated for the fact that these individuals did not know each other previously and were not part of an existing informal work group in the health care sector.

Possible explanations for the different results in the two cases, explanations that are related to individual and organizational conditions, could be useful for other CoP experiments in the future. In the health care case, there was more motivation and involvement on behalf of participants in a specific project that clearly meant something to them, and the participants were all volunteers. In the forestry-financing case, the participants were appointed, and their project was somewhat more diffuse; also, unlike the health care CoP, the forestry-financing CoP leaders changed over time, contributing to reduced motivation and interest in participation.

The allocation of adequate time is often mentioned as a prerequisite for the success of CoPs. In these cases, since the project was outside of the employer organization in the first case and somewhat experimental in the second, there was not much time specifically allocated to either project. However, in the health care case, it appears that this did not cause difficulties, due to the strong personal motivation and commitment of the participants; in the forestry-financing case, motivation and commitment were not sufficient to overcome dissatisfaction that the project had to be developed in addition to regular work responsibilities.

Despite the initial findings, there are a few limits to this research. First, the analysis conducted here cannot necessarily be taken to represent all potential CoPs; however, it highlights the diversity of realities observed in the various CoPs, in terms of dynamics, learning, and CoP results, while the literature tends to present a homogeneous vision. This leads us to conclude that such in-depth analysis may give more insights than statistical analysis alone (which we also conducted) and that it permits a better understanding of the conditions for success or other effects observed. The choice of two of the most contrasted cases for in-depth analysis was thus preferred, because in our view it appears to provide greater insight.

As for future research, this detailed study of two contrasting cases presents some interesting insights into the new type of teamwork and collaborative learning possible through virtual communities of practice, but more empirical research is needed to better understand the collaborative and learning dynamics within such groups.

Notes

1. The two case studies were done in the context of a collective research project with colleagues from Laval University, HEC, and the University of Montréal. For more details, see Jacob, Bareil, Bourhis, Dubé, & Tremblay, 2003, and Bourhis & Tremblay, 2004. Documents and full case studies from the research are available, in French, at the Cefrio website. We wish to thank all our colleagues for collaborating in the project.
2. Our colleagues in the CEFRIO project evaluating the content of exchanges between the participants present a slightly more positive view. They indicate that 234 messages were sent in a year, that about 90% of participants read each message, and that about 9 out of 10 participants wrote at least one message. However, they also observe that these positive results toward the end overshadow the difficulties that were due to a lack of participation at the beginning of the project (see: Laferriere, Campos & Benoit, 2004).

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