Communities of Practice: new modes of collaboration and networked learning ?

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Abstract

Over the last decades, there has been more and more interest in various modes of networked learning, knowledge creation, communities or practice (CoPs) but there is not yet a clear identification of the conditions to succeed in such initiatives. This interest for CoPs stems from the fact that organizations expect substantial gains from knowledge development and networked learning. Communities of practice are seen in many organizations as a source of networked learning, and ultimately of competitiveness and innovation. The interest for communities of practice arises from this objective of learning and innovation, but it is viewed as a specific form of learning and sharing, in principle more centred on the individuals and their exchanges than on "management" by the firm, although the firm does seem to have a role to play in fostering such initiatives. Thus, the use of communities of practice has emerged as a way to develop collective skills and organizational learning, in order to foster innovation and success for organizations. In this paper, we identify the conditions of success or failure of communities of practice as a mode of networked learning, knowledge management and knowledge sharing, as these conditions have not yet been established. We first define this new form of learning and knowledge sharing through communities of practice. We then present some of the results concerning success, or more precisely attainment of objectives, as success can be defined in various ways. We do this on the basis of 7 case studies of communities of practice implemented in firms. The empirical results are based on a questionnaire survey administered to the participants of these communities of practice, but also on qualitative interviews and regular work and exchanges with some of the animators and participants in these communities of practice. We highlight some interesting differences observed according to age and gender, as well as some limits and challenges that were observed in the learning and sharing process, which are often underestimated. We mainly highlight the factors which explain success, defined as attainment of objectives, and these are : commitment and motivation of participants for the attainment of objectives, as well as the presence of a leader, animator or steward.

Keywords

Communities of practice, learning, networked learning, knowledge management, knowledge sharing,

Introduction

In this paper, we aim to identify the conditions of success or failure of communities of practice as a mode of networked learning, knowledge management and knowledge sharing, as these conditions have not yet been established (Probst and Borzillo, 2008). In our work we started by defining the concept of success, and defined it on the basis of the attainment of specific objectives by the community. Our paper presents results from a research on communities of practice in Canada, but also a larger reflexive approach on communities of practice as a new mode of collaboration and learning in work, and possibly a new mode of knowledge sharing and networked learning in the workplace.

In the following pages, we first define this new form of learning and knowledge sharing or management through communities of practice. We then present some of the results concerning success, or more precisely attainment of objectives, as success can be defined in various ways. We do this on the basis of 7 case studies of communities of practice implemented in firms. But first, a definition of the concept.

1. Communities of Practice

The term 'communities of practice' was first used by Brown and Duguid (1991) and by Lave and Wenger (1991), and it was popularized more widely in Wenger's major works (Wenger et al. 2002, 2000; Wenger, 1998). It refers to the idea of sharing information and knowledge within a small group (Belkassem and Koubaa, 2013), as well as to the value of informal learning for a group and an organization. Wenger et al. (2002, p.4-5) describe a community of practice as a group of participants who:

"Don't necessarily work together every day, but they meet because they find value in their interactions. As they spend time together, they typically share information, insight, and advice. They help each other solve problems. They discuss their situations, their aspirations, and their needs. They ponder common issues, explore ideas, and act as sounding boards. They may create tools, standards, generic designs, manuals, and other documents – or they simply develop a tacit understanding that they share. However they accumulate knowledge, they become informally bound by the value that they find in learning together. This value is not merely instrumental for their work. It also accrues in the personal satisfaction of knowing colleagues who understand each other's perspectives and of belonging to an interesting group of people. Over time, they develop a unique perspective on their topic as well as a body of common knowledge, practices, and approaches. They also develop personal relationships and established ways of interacting. They may even develop a common sense of identity. They become a community of practice."

In the 90s, observers mainly studied informal communities that were created spontaneously in a workplace. However, over the years and since 2000 particularly, there has been increasing interest in creating and cultivating such communities in workplaces (McDermott, 2000, 1999; Swan et al., 2002; Wenger, et al., 2002). Many of these communities are teleworking communities that use IT (Belkassem and Koubaa, 2013), and this was the case in the communities we studied. In this context as in other forms of organizational change, leadership is considered essential by many (Bonneau, 2015; Bootz, 2013, Bootz and Kern, 2009; Cohendet et al., 2016, 2010). The role of leadership or 'stewardship' (Wenger, 1998) is apparently essential also to bring more people to participate, or for them to move from the periphery to the core (Borzillo, Aznar, Schmitt, 2011).

The following definitions complete our understanding of this concept (Mitchell, 2002):
-Communities of practice are people who share a concern, a set of problems or a passion about a topic, and deepen their knowledge and expertise in this area by interacting on an ongoing basis;
-A group whose members regularly engage in sharing and learning, based on their common interests.

Wenger et al. (2002; and Wenger, 1998) as well as Mitchell (2002), among others, indicate that communities of practice take on various forms; they can be more or less structured, or on the contrary rather informal, oriented towards work or towards personal interests (epistemic communities). In the cases we studied, communities were of the structured type, most of them being formally supported by one organization, a few being inter-organizational, but all having to do with their work activity and not personal interests, as is more often the case in the informal type of community.

Much existing literature is based on the analysis of face-to-face communities (Gherardi and Nicolini, 2000), but many communities actually function in a context of distance or telework (Haines, 2014; Hildreth et al., 2000), but the essential element is the sharing of information, while some authors insist on the capacity of absorbing this information or knowledge (Belkassem and Koubaa, 2013). This brings us to the issue of virtual communities of practice, which are more and more common in a global environment, and are the type of community we have studied. In our view, this virtual dimension is an important aspect of communities of practice theory, especially in the global context, and it requires more detailed analysis. We carried out this research in order to extend this analysis, and to identify the main challenges related to virtual or distance communities of practice, as they are found in e-learning for example.

At first, authors mainly studied informal communities or groups (Gilley and Kerno, 2011) that were created spontaneously in a workplace. However, over the years, there has been increasing interest in the creation of such communities in workplaces (McDermott, 2001; Wenger et Snyder, 2000), and even in the creation of teleworking communities that use IT, as was the case of the project in which we participated. Gender is often an important variable in research on work or learning issues (Tremblay, 2017, 2016, 2005a,b,c,d), and we thus included this dimension in our analysis.

The advantages of communities are said to be the following: informal diffusion of relevant knowledge, exchange of knowledge between peers and, as a result, improvement of innovation and productivity.

Proceedings of the 11th International Conference on
Networked Learning 2018, Edited by: Bajić, M,
Dohn, NB, de Laat, M, Jandrić, P & Ryberg, T

ISBN 978-1-86220-337-2

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Much of the literature is based on face-to-face communities, while many function in a context of distance or telework, which brings us to talk of virtual communities of practice, which is what we studied in our project, and is more and more common in a global environment. In our view, this virtual, or rather, distance dimension is important, especially in the global context, and it requires more analysis.

Also, much of the literature does not take into account the temporal dimension, while it appears essential in analyzing organizations, which by definition evolve over time (De Terssac and Tremblay, 2000). The most detailed model of the evolution of communities of practice was presented by Wenger et al. (2002), but it presents a relatively normative portrait of communities of practice, from which reality often departs.

Wenger et al. (2002) define five stages (Wenger et al., 2002, and Bourhis and Tremblay (2004). At the beginning, the community is an informal network, a potential community. It then unites itself and acquires maturity, and then momentum, and becomes productive, until at some point, an event makes it essential for the community to change or renew itself. Again, this seems a little normative in comparison to the real life of communities, and this is why we wanted to better understand the variables which influence the life of CoPs, and especially virtual CoPs.

Let us now turn to conditions of success of these communities. First, group work always requires a number of conditions and CoPs are not an exception to this rule. On the contrary, these conditions are certainly even more important in the CoP context, since participants must in principle share tacit knowledge, collectively build up knowledge, and solve production or service problems. In this context, in our view, the social relations between actors and demographic characteristics cannot be neglected, although they tend to be in the literature on CoPs. We therefore turned to the literature on collaborative learning to dig into the reality more deeply and put forward new questions to the participants of the communities.

One of the main conditions mentioned in the literature on collaboration and collaborative learning (Henri and Lundgren, 2001) concerns the commitment of participants to the task or the community, as well as the interest and motivation of individuals to work together as a group. In the CoP literature, some authors refer to a "joint enterprise" to describe the mission or common objective that participants give to a CoP. However, few authors have determined how to foster this commitment, which appears to be taken for granted regardless of the context and the social relations of work. Second, many authors emphasize the importance of having a shared set of resources or what could be referred to as "common baggage," or common language, in order to facilitate exchanges and avoid misunderstandings and conflicts. We will thus try to validate the importance of these different variables in explaining the success, or attainment of objectives, of the CoPs.

2.Methodology

The results presented in this paper are derived from an action research on a dozen communities of practitioners (CoPs) conducted under the aegis of the Centre francophone d'informatisation des organisations (CEFRIO). In fact, seven CoPs have actively participated in the research, which was carried out from 2001 to 2003. We have conducted more recent research on CoPs, but not as extensive, and while analysis is ongoing, similar results are found. In the research here, hundred and eighty (180) participants answered questionnaires on starting up a CoP and slightly less than 106 participants answered evaluation questionnaires six months later. In addition, focus groups and recordings of critical incidents in each of the communities were also conducted so as to better understand the dynamics of each of the CoPs. We focus here on the aspects related to learning and training, the theme of this conference, but also presented amongst the main objectives of the CoPs. Indeed, in research on 'success' of CoPs, it is actually indicated that this concept can be defined in various ways, and it is recommended to actually define it in terms of the specific objectives of the CoPs, which is what we did. We also studied the technologies used for the CoPs in this research in 2003, as well as more recently (Tremblay and Rochman, 2017). However, technology did not appear to be a determinant variable in either case: whatever the specific technology used, as long as it was relatively simple to master, the results were similar. Management issues and Human Resources management appeared more crucial, and this is why we chose to put the accent on this dimension, in relation with learning and training. We present here the factors of success, or of attainment of objectives, on the basis of the online survey conducted.

Proceedings of the 11th International Conference on
Networked Learning 2018, Edited by: Bajić, M,
Dohn, NB, de Laat, M, Jandrić, P & Ryberg, T

ISBN 978-1-86220-337-2

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3. Results from our Research

We first present a few demographic characteristics of our respondents. The majority of respondents, that is 60% (105 out of 173 respondents to this question), were aged from 35 to 49.

3.1. Attainment of objectives

Although the objectives of the communities of practitioners studied differed (Jacob et al., 2003), they were mainly aimed at learning through exchange and collaboration. It is interesting to note how the objectives have evolved over time. When the communities were starting up, the objectives identified by the participants were usually related to exchange and sharing of information and knowledge, better utilization of delocalized resources, as well as the creation of a collective memory - objectives which actually pertain to knowledge sharing.

In the beginning, the majority of respondents had mixed feelings about the success and usefulness of the community, even though they thought that it had had a positive impact on the work climate. Thus, although the participants did not appear to be enthusiastic at time T1, collaboration within the CoPs seemed to be rather positive. (Bourhis and Tremblay, 2004). This was found in other research as well (Tremblay and Rochman, 2017).

However, after a few months of work in a virtual CoP (T2), the achievement of objectives seemed to have progressed, but it was uneven. In fact, although certain CoPs felt that they had achieved their objectives (Tremblay, 2004a), this was not so true for all. Perhaps it was too soon to assess the achievement of objectives since, unlike project teams or groups, CoPs are not supposed to have a specific schedule and they have to learn new ways of working together, which takes time. In another research, where the CoP had gone on for 5 years, similar results were found, that is an uneven perception of attainment of results by various participants (Tremblay and Rochman, 2017).

Concerning the partial achievement of the objectives of CoPs, there are various possible reasons for this, including the frequent change of CoP leader, the loss of interest on the part of management or participants, or the lack of time for participation. However, it must be stressed that learning and experimenting with a new problem-solving approach, which were not always among the objectives considered to be the most important at first, seemed to have been relatively well achieved by a number of CoPs and these forms of learning were greatly appreciated by the participants. There appear to be criteria and conditions for CoPs to function and clearly, this type of arrangement cannot be transferred anywhere without taking into account these considerations.

All of the CoPs operated with a knowledge-sharing telesoftware. Some participants were not very familiar with the software or had difficulty in mastering it at the beginning, but the main problem was time to invest in this learning. The use of software such as Knowledge Forum or Lotus Notes, or some firm-specific software, was different in each case; this allowed CoP participants to exchange messages.The information brought forward by participants was then grouped together on a space and could be reviewed and re-organized according to the themes discussed in the exchanges. In principle, this is how virtual (i.e., teleworking) communities must jointly develop knowledge, and this is still very much the case presently. Specific technologies have changed, but they are in essence quite similar, at least in the views of participants (Tremblay and Rochman, 2017). Also, in the end, technology did not appear to be a determinant variable for attainment of objectives in this research, and another as well (Tremblay and Rochman, 2017).

We analyzed the data on success, or attainment of objectives, according to various demographic variables, but only two (gender and age) came out significantly in some of the analyses. For various reasons, often lack of variance in the respondents, the other variables tested did not show up as significant: level of schooling, professional category, language were tested but not significant.
The success of the CoP was measured in various ways, including the attainment of strategic and operational objectives, according to demographic variables, and analysis revealed significant links with gender and age, which are shown here.

Proceedings of the 11th International Conference on Networked Learning 2018, Edited by: Bajić, M, Dohn, NB, de Laat, M, Jandrić, P & Ryberg, T

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3.2. Differences by gender

Table 1 highlights some gendered differences, but also an interesting convergence in many answers, since most answers do not differ significantly (n-s : non significant). However, women systematically rate higher for the various elements. Respondents consider that the first objective of CoPs is to facilitate exchange and sharing of information, followed by favouring excellence, developing competencies, favouring learning, better quality, better use of delocalized resources, valuing innovation and stimulating creativity. Note that importance is measured at time 1 (T1), while attainment of objectives is measured at time 2 (T2).

Table 1 – Importance and attainment of strategic and operational objectives, according to gender

| Objectives | gender | | | | | |
| | men | | women | | Total | |
	Importance A Average N Écart-type	Attainment B Average N Écart-type	Importance Average N Écart-type	Attainment Average N Écart-type	Importance Average N Écart-type	Attainment Average N Écart-type
Value innovation At(142)= -3,32*** B n-s	4,00 55 0,82	3,54 26 0,81	4,44 89 0,74	3,53 51 1,06	4,27 144 0,80	3,53 77 0,98
Better relation with client(s) At(138)= -2,78** B n-s	3,83 52 1,00	3,10 21 0,89	4,26 88 0,82	3,18 38 0,83	4,10 140 0,92	3,15 59 0,85
Better quality At(140)= -2,86** B n-s	4,15 53 0,93	3,25 24 0,79	4,53 89 0,64	3,41 44 0,95	4,39 142 0,78	3,35 68 0,89
Value excellence At(142)= -2,09* B n-s	4,38 53 0,69	3,29 28 0,76	4,62 91 0,65	3,65 49 0,97	4,53 144 0,67	3,52 77 0,91
Rationalisation n-s	3,39 51 1,22	2,61 18 0,92	3,57 86 1,14	3,07 28 0,94	3,50 137 1,17	2,89 46 0,95
Value competencies At(140)= -4,98*** B n-s	3,90 53 0,81	3,22 27 0,93	4,53 89 0,66	3,38 40 1,00	4,30 142 0,78	3,31 67 0,97
Efficiency n-s	3,96 52 0,91	3,23 22 0,92	4,17 88 0,90	3,35 37 0,95	4,09 140 0,90	3,31 59 0,93
Facilitate exchange and sharing of information At(94,58)= -2,11* Bt(81)= -2,42*	4,49 55 0,74	3,48 31 0,89	4,74 92 0,59	4,00 52 0,97	4,65 147 0,66	3,81 83 0,97
Experiment a new type of problem resolution At(140)= -2,20* B n-s	3,98 55 0,89	3,60 30 1,00	4,29 87 0,75	3,78 51 0,86	4,17 142 0,82	3,72 81 0,91
Better use of delocalised resources At(143)= -2,42* B n-s	4,09 55 0,97	3,44 25 1,00	4,46 90 0,82	3,81 43 0,96	4,32 145 0,90	3,68 68 0,98
Reduce workforce n-s	2,17 54 0,97	2,45 11 0,93	2,32 78 1,04	2,39 23 1,08	2,26 132 1,01	2,41 34 1,02

Proceedings of the 11th International Conference on
Networked Learning 2018, Edited by: Bajić, M,
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Maximise working time n-s	3,49 53 1,15	2,86 21 1,01	3,75 85 1,08	3,00 39 0,95	3,65 138 1,11	2,95 60 0,96
Reduce duplication At(137)= -2,33* B n-s	3,98 54 1,00	3,28 25 1,06	4,37 85 0,91	3,39 44 1,02	4,22 139 0,96	3,35 69 1,03
Stimulate creativity At(140)= -3,93*** B n-s	3,87 54 0,91	3,32 28 0,86	4,43 88 0,77	3,64 50 1,06	4,22 142 0,87	3,53 78 1,00
Favor learning At(140)= -3,96*** B n-s	4,06 54 0,76	3,59 29 0,82	4,57 88 0,74	3,90 52 0,89	4,37 142 0,79	3,79 81 0,88

Légende :
A : Scale of importance where 1=not at all important; 2=slightly important; 3=average importance; 4=quite important; 5=very important
B : Scale of attainment of objectives where 1=not attained at all; 2=slightly attained; 3=more or less attained; 4=attained; 5=perfectly attained
n-s = T-Test non-significant
*** $p \leq 0{,}001$ ** $p \leq 0{,}01$ * $p \leq 0{,}05$

As concerns differences according to gender, in terms of strategic objectives, only the objective of valuing excellence presented a significant gendered difference. (tables available in Bourhis and Tremblay, 2004). For operational objectives as well, differences according to gender are not numerous, since only the objective of facilitating exchange and sharing of information was differentiated according to gender. This is interesting since it indicates that in general, men and women agree on the objectives of the organization when introducing communities of practice.

3.2. Sources of satisfaction
Satisfaction or dissatisfaction constitute an important issue for success. In general, participants appreciated the pertinence of the topics addressed in the exchanges in relation to their work, the collaboration between members, the solving of work problems, the establishment of consensus, group work, and the development of new skills. They were slightly more critical of the quality of the exchanges, which was viewed differently by various CoPs. It must, however, be noted that younger participants seemed to appreciate all these aspects more than participants aged 50 or over.

Participants were also asked to assess different aspects of their experience. It was clear that the most interesting aspect for participants was learning from other people as well as exchanging and sharing information and knowledge. Nevertheless, it is interesting to note that the majority of participants thought that they had learned more from others than had contributed to the exchanges themselves. It thus seems that there was a deficit in active participation by CoP members, since many of them remained somewhat on the periphery of the community's central core, in what is referred to as "peripheral participation." (Wenger, 1998, Tremblay, 2004, 2004a).

It must be noted that women's involvement in the project was often slightly higher than that of men, at least according to their own evaluation. More research needs to be done however on this issue of involvement and participation, according to gender, since it was not possible to determine whether other elements of context (organizational culture, financial context of the firm, the interest of the CoP project itself, etc.) might explain the stronger involvement of women in the cases covered here.

3.3. Sources of dissatisfaction
The main sources of dissatisfaction identified by the participants relate to the lack of recognition of participation by the employer, sometimes also the lack of peer recognition, and in particular the too often limited time (given the objectives), spent on the community's activities. In fact, the majority of participants were not released from other tasks to participate in the CoP and this activity therefore took up some of their working time (Tremblay, 2004). However, the most satisfied CoP in this regard is made up of a group of some 20 female health professionals, whose CoP was not supported by their employer but by a professional association, and thus the participants used their personal time to participate (Tremblay, 2004). Once again, motivation and commitment

Proceedings of the 11th International Conference on Networked Learning 2018, Edited by: Bajić, M, Dohn, NB, de Laat, M, Jandrić, P & Ryberg, T

ISBN 978-1-86220-337-2

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to the project emerged as the key variables in the success of this CoP. Participants were willing to put personal time in a project because the knowledge acquired and the achievements seemed to be worth their while.

In contrast, in other cases, the achievements were apparently too minor or not sufficiently visible or satisfactory. This negative view was confirmed by the fact that the majority did not think that the CoP activity would be recognized in their performance evaluation, career progression, and skills assessment. However, it seemed that participants were generally more optimistic about the recognition of their learning by colleagues, although this did not yield concrete results in career terms.

Most of the participants in the CoPs studied did not know each other well beforehand, but were designated to participate in these CoPs. Therefore not all of them were volunteers. However, one CoP in which most participants did not know each other at all – composed of the female health professionals - was the most successful case in our view, which means that other factors (professional commitment in this case) can compensate for the absence of prior acquaintance. Nevertheless, the latter is deemed to be important by many authors, as it is considered to be a source of trust and greater collaboration between participants. Indeed, it was found that although prior acquaintance can make it easier to collaborate in certain CoPs, it is not a sufficient condition for them to achieve their objectives. Thus, although being in the habit of collaborating can result in trust, which is generally considered to be essential to collaboration and learning, it is evident that participants need additional motivation to move the CoP forward and achieve its objectives. Moreover, women spent twice as long as men on CoP activities, on average, one hour per week versus half an hour for men.

These observations contribute to the existing literature on the success of communities of practice, since they nuance the importance of prior acquaintance and organizational support, often considered as determinant characteristics of the success of communities of practice. Our research tends to highlight the importance of commitment, personal involvement and interest in learning from others. It may also be that the most successful groups had less difficulty working from a distance or teleworking (Tremblay, 2003, 2002; Tremblay and Rochman, 2017)

The research has some limits and the following questions should be explored further: Are women more motivated by this form of learning and collaboration? Do they trust people more and are they more willing to share knowledge? Or, were the projects in which they participated more motivating or characterized by a better leadership or stewardship ?

4.Conclusion

To conclude, a number of factors related to the conditions and challenges associated with CoPs are summarized in order to identify those which would help promote the wider use of these collaborative learning practices. These results complement those of Probst and Borzillo (2008). The role of the animator, leader or 'steward', as Wenger has named this function, appears essential. The 'leadership' role of this person is important according to our research, but also to others (Bonneau, 2015; Nezet, 2015).

Participants' commitment is considered to be a crucial factor in the success of CoPs. In fact, the most successful CoP was one in which the participants' commitment was indeed important and in this group everyone was totally voluntary, and the context is not the context of work, but rather a professional organization. This element appears to be essential in explaining the motivation and interest in this CoP; the totally voluntary nature and the interest for the project at hand – in this case creating a website on heart health – are fundamental in the motivation and in the end results (Tremblay, 2004a,b).

However, other factors can play a role in explaining the more mixed success of other cases: for example, the lack of dynamism on the part of the CoP leader, the frequent change of leaders, or the fact that some participants did not contribute much to the CoP although they maintained that they had learned a great deal by participating. These factors must be taken into account when developing learning through CoPs. One of the communities which functioned the best was headed by a female health professional who had been hired specifically for this task, and therefore invested the necessary time in the project. (Tremblay, 2005a,b). Again, it appears that "imposed cooperation" which is often the case in organizational contexts with specific objectives for the CoPs cannot ensure the attainment of objectives, including learning and satisfaction of participants.

Literature has also shown that the support offered to participants by the organization is often viewed as a factor of success. However, our results indicate that most of the participants would not necessarily have wanted more

Proceedings of the 11th International Conference on Networked Learning 2018, Edited by: Bajić, M, Dohn, NB, de Laat, M, Jandrić, P & Ryberg, T

ISBN 978-1-86220-337-2

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resources or training (in conflict management, communication or problem solving) even though few had received the training. Therefore, our findings suggest that training and support resources are not such a key factor in the success of CoPs as is indicated in the litterature.

The commitment or involvement of participants is much more important or, at the very least, is able to compensate for this lack of support. Participants indicated that their organization's interest in the CoP had not increased over time and this also seems to be one of the challenges associated with the medium- and long-term viability of CoPs. Again, one of the most successful cases was one composed entirely of female health professionals which was outside of the employer organizations and therefore this indicates that organizational support is not necessarily the most important source of success, personal commitment being possibly as determinant.

In any case, although relatively new, this CoP formula offers interesting perspectives for learning, but we can see that it cannot be generalized without considering various dimensions: age, gender, commitment, the voluntary dimension and various other characteristics of the community need to be taken into account, since they may have an impact on success and attainment of objectives of the community.

Also, research clearly needs to be pursued. In the context of organizational and labour process issues, we need to investigate the conditions and factors of success for structured CoPs, which are created by organizations for a specific goal. There has been much work in the 90s and 2000s on informal CoPs, especially in the field of education, but there has been much less work in sociology of work and other social sciences on the issues and challenges that CoPs pose, much of the literature being of a normative nature. This is why we wanted to contribute by doing some empirical research to test to what extent learning and sharing was actually occurring and to try to identify the factors that make it happen. Various variables explain higher levels of success or satisfaction with attainment of objectives, but the voluntary nature of the participation appears essential to induce cooperation.

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Proceedings of the 11th International Conference on Networked Learning 2018, Edited by: Bajić, M, Dohn, NB, de Laat, M, Jandrić, P & Ryberg, T

ISBN 978-1-86220-337-2

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