Collaboration within Virtual Organization's Social Networks

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Abstract

The purpose of this paper is to study collaboration within virtual organization's social networks. The starting point of the paper is the alleged need of modern organizations to harness their know-how and capabilities across organizational boundaries with those of their partners in order to create continuous streams of innovations. The most important capability – meta-capability – in this process is proposed to be collaboration. Business policy literature proposes that information and communication technologies (ICTs) have enabled the separation of location, time, and the distribution of fragmented processes. Thus, today people are not anymore bound by accomplishing tasks individually during their working day and within the walls of an organization but by continuously collaborating with each other off space and time through electronic medias. However, the strength of ICTs to offer potential playgrounds for creating, maintaining and developing co-operative processes, and for committing members of virtual organization in the collaboration type of activities is still a question. Consequently, the efforts for integrating collaboration, virtual organization, and social networks into a coherent landscape remain yet a matter of empirical investigation.

Keywords

collaboration, co-operation, social networks, virtual organization

Introduction

It has been widely argued that it is the social networks that account for regularities in day-to-day work and generally provide key channels for the business of getting things done. Thus, individuals are prompted to interact with each other and build strong relationships that they can use to their advantage – and in organization's viewpoint – that will benefit the whole organization per se. In consequence, individuals are consistently encouraged to share information and knowledge to alter their activities toward common purposes.

Nowadays organizations that use modern information and communication technologies (ICTs) and that co-ordinate their work toward a common goal in order to achieve benefits of different kinds is becoming ubiquitous. It is not unusual anymore to have overlapping activities across organizational boundaries. Thus, the social exchanges that may once have taken place face-to-face or within the walls of an organization may now take place electronically. In other words, today the members of a virtual organization are working across

space, time, and organizational boundaries with links strengthened by ICTs (see e.g., Wellman et al. 1996).

The aim of this paper is to describe and discuss the conditions of virtual organizations and social networks as a way to pursue collaboration. Thus, different types of virtual organizations and social networks will be discussed, and a tentative model of the developmental cycle of collaboration will be suggested. Thereby, the research aims at generating knowledge for understanding ICT-mediated social interactions in order to harness the collaborative outcomes of virtual social exchanges to the better use of modern organizations in the future.

The structure of the paper is following: first we will introduce the concept of collaboration and present a theoretical frame for studying collaboration in virtual organization's social networks. Second, we will elucidate the proposed theoretical frame by focusing on features and conditions of virtual organization and social networks. Third, we will discuss some potential advantages and hindrances of collaboration. Finally, we will conclude by presenting some remarks on the subject matter.

Cycle of collaboration in virtual organization

Defining collaboration

In general, the terms "co-operation" and "collaboration" are often used interchangeably, referring broadly to a process of working together for a common purpose. For example, De Michelis (2001) defines co-operation to be

> *"… a matter of communication, learning, and knowledge sharing… A co-operative process can be characterised by the communicative relations binding its participants to each other and with the actions they are performing."* (De Michelis 2001, 126)

In addition, Hossain and Wigand (2004) define virtual collaboration as following:

> *"…Virtual collaboration….refers to the use of information and communication technologies for supporting the collective interaction among multiple parties involved"* (Hossain & Wigand 2004, 2).

Although these two definitions capture aptly the conditions of collaboration in virtual organizational life such as members' long-term voluntary engagements in collective actions and the ICTs as playing an important supportive element in the collaborative processes of the modern organizations, they still lack the intrinsic motives for taking actions and caring trust. Hence, we understand co-operation and collaboration as separate terms (but that can be studied by using same concepts). In our viewpoint, collaboration is an extension of co-operation (i.e., an extension of these two definitions): in ICT-mediated collaborative relationships each party is as committed to other's interest as it is to its own, and this commitment reduces the need for the continual assessment of trust and its implications for how rewards from the collaboration between the collaborating parties will be divided (see

e.g., Miles et al. 2005, 36-41). Moreover, through ICT-mediated collaborative relationships people may constitute a whole, a community in which learning, knowledge sharing, and open communication are commonly held values.[1]

Continuum from co-operation to collaboration

The development processes towards collaboration can be described as a developmental cycle (see Figure 1). This simple and tentative model tries to illustrate the fact that virtual organization and social networks as "loose coupling" can in right circumstances transform into virtual communities of practice, a joint enterprise. Thus, there can be a movement in virtual organization's social networks from co-operation to collaboration. The actors – the networked members of virtual organizations – are the little dark balls describing their location in the continuum at certain point of time. The possible dimensions describing the slide are not only roles, relationships (e.g., in regard to knowledge and knowledge creation/transfer), and rationale emerging from the literatures of virtual organization and organizational research on innovation and knowledge creation, but also responses from the social networks perspective.

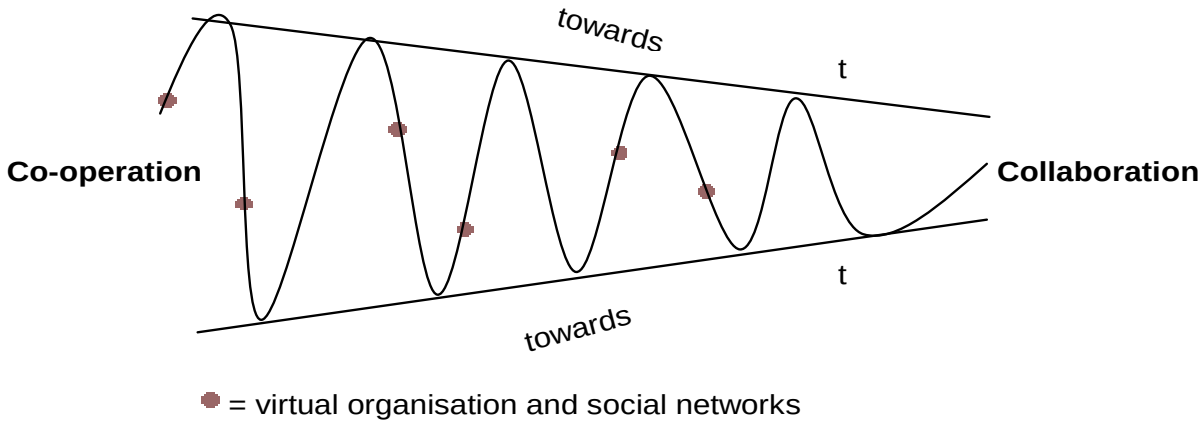

Figure 1. Tentative model: developmental cycle of collaboration

Hence, co-operation is created through processes of working together for common purposes. Through mutual learning, knowledge sharing, and open communication members in virtual organization start gradually take actions and break boundaries toward collaboration. By building convenient and long-term playgrounds for virtual social exchanges to occur more or less frequently organizations can facilitate processes in which members of virtual organization are both active participants of virtual social communities and constructing meanings and identities in relation to these communities. The deep commitment and trust developed through these processes will enhance the likelihood of the movement along the slide, i.e., the transformation of co-operation into collaboration.

1 This idea is inspired by the concept of communities of practise which generally speaking refers to groups of people bound together by shared expertise and passion for a joint enterprise (see e.g., Wenger 1998).

Virtual organization

Defining virtual organization

According to Ahuja, and Carley (1999)**,** a virtual organization is

> *"… a geographically distributed organization whose members are bound by a long-term common interest or goal, and who communicate and coordinate their work through information technology. "* (Ahuja & Carley 1999, 742)

The members of a virtual organization are networked; they interact with each other either simultaneously in real time or asynchronously establishing formal (e.g., ties mediated by work flow, resource exchange, and personnel transfer) and informal relationships (e.g., ties whereby members of different unit seek personal advice from each other). It is the availability of information that makes possible the separation of location, time, and the distribution of fragmented processes. Moreover, it is proposed that while the members of a virtual organization increasingly share a common interest or goal, collaborative relationships are likely to be formed, maintained, and developed further within and across organizational boundaries. (ibid; see also Nahapiet, Gratton & Rocha 2005)

Literature on virtual organizations rests basically on an assumption that organizations adopt virtual forms to be able to consistently obtain and co-ordinate critical capabilities efficiently through value-adding business processes. The previous literature has introduced the main characteristics of a virtual organization with regard to social networks as following:

Space. One of the main characteristics of a virtual organization is its geographical dispersiveness: members of a virtual organization are scattered to different locations and yet they are expected to deliver the outcomes that would be expected of a traditional, co-located members. The lack of face-to-face contacts may attenuate the relationship knowing what others know, valuing it, and timely accessing to information seeking and knowledge sharing (see e.g., Brass et al. 2004, 797). Moreover, the feelings of disconnectedness may easily erode working moral, commitment, and communication of the individuals. As a consequence, trust becomes a critical factor in a virtual organization and a promoter of collaboration: as the members of a virtual organization are primarily self-managed and self-controlled, they need to act accordingly some commonly held values and norms to be able to work together successfully (see e.g., Hossain & Wigand 2004). Thus, the efforts to create and maintain togetherness are crucial challenges in a virtual organization (Connaughton & Daly 2004, 119).

Time. The ICTs have enabled time to become invisible and meaningless. Members of a virtual organization are not anymore bound by accomplishing individual tasks during the working day but by continuously co-operating with other members on different projects in real time through electronic medias. Social network researchers argue that the actors scheduled to work at the same time are more likely to communicate (Brass et al. 2004, 797). Today, however, people are truly working apart and at different times. From organizations' viewpoint, this has not only increased the desired flexibility in organizational life (e.g., enhanced responsiveness, adaptability, autonomy, and decision-making power) but also complexity as the members of virtual organization may not be sure of their own duties and responsibilities. For example, Gripenberg (2004) argues ICTs are actually changing the culture of peer-superiors

interactions. Her study shows that with the choice of ICTs it may be possible to shift and increase responsibilities away from oneself towards someone else or vice versa (Gripenberg 2004, 119). Not only can this increase the number of communication (and the possibility of the creation of virtual social links) between members of a virtual organization, but it can purely and simply lower the quality of interactions (and thus diminish the establishment of virtual social links) especially when people are stuck with irrelevant information and not able to sort out the most important ones.

Interaction. In general, social interaction is regarded as a process by which two or more people communicate and act in ways having consequences for one another (see e.g., Cook & Whitmeyer 1992). The interactions have seen to occur directly face-to-face or indirectly between individuals. Most part research on virtual organizations has focused on the (indirectly) interaction patterns at communication viewpoint; i.e., on the ICT-mediated asynchronous and synchronous communication patterns which are assumed to replace the traditional face-to-face interactions.[2] In our opinion, this kind of technology orientation towards virtual interactions does not actually prompt us to see under the formally defined organizational structures and to really understand how and why members in virtual organization interact and create different types of virtual social links with each other.

Some social networks researches have studied computer-supported social networks arguing that those networks will sustain strong, intermediate, and weak ties[3] that will provide information and social support in relationships (see e.g., Wellman et al. 1996). However, it has also been highlighted that proximity may facilitate the initial contact, whereas e-mail and other communication technologies may help maintaining relationships once they have formed (see e.g., Brass et al. 2004, 797). Thus, while the first questions the in-person contacts between members in virtual organization, the latter suggests that face-to-face communication is very influential aspect and needs to be handled one way or another in a virtual organization as well. Consequently, the question of the importance of face-to-face interactions in virtual organization context remains yet ambiguous.

Forms of virtual organization

Campbell (1999) classifies roles, relationships, and rationale as the primary dimensions describing the different forms of virtual organizations. As shown in Table 1, the first form of virtual organization is an *internal network* in which organizations focuses on their core

2 For example, Chinowsky and Rojas (2003) identify three categories of interaction technologies: communication, cooperation, and collaboration technologies depending on their ability to provide support in binding people together and helping them to work efficiently. In the first, communication technologies, the focus is on message communication (i.e., providing another individual a message that communicates a thought regarding current issue under discussion). Second, cooperation technologies are electronic advances over the previous category, focusing on the ability for a group of individuals to asynchronously interact and manipulate project data. Finally, collaboration technologies are characterised by their capability to permit synchronous, real-time manipulation of common project data. (Chinowsky & Rojas 2003, 99-100)

3 In social networks literature, it has been argued that the shape of the social networks helps determining networks' usefulness to its individuals. Granovetter (1973) was the first researcher who suggested that weak ties (e.g. the connections between colleagues) are more important for personal advancement than the strong ties of family and friendship. In organizational setting, it has been argued that the strong ties between business units facilitate the transfer of complex knowledge where as the weak ties facilitate information collection when there is much information to collect or when the transfer of less complex knowledge is in question (Brass et al. 2004, 802, 806).

competencies and processes supplemented by a number of external partners to jointly bring forward a service/product to the marketplace. The rationale for the internal network is the internal synergies achieved by market and customer-driven relationships. (Campbell 1999, 22)

Table 1. Forms of virtual organization (Campbell 1999, 22)

Form	Role	Relationships	Rationale
Internal	Independent business units responding to customer needs	Market and customer driven	Internal synergies
Stable	Outsourcing of non-core processes to provide limited flexibility	Static and contract driven	Lower cost
Dynamic	Extensive external relationships based on immediate opportunities	Short term and opportunistic	Market flexibility
Web	Community of partners that jointly delivers a service to the marketplace	Knowledge-based	New enterprise

As the internal networks have already been practiced successfully for years in different branches of industry, Campbell (1999) suggests other forms to be taken into account. He identifies *stable networks* to be existed in mature industries that are less affected by rapid technological changes, such as in car manufacturing. Relationships in these networks are usually long-term, contract-based, and driven primarily by cost factors. In contrast to stable networks, *dynamic networks* operate in highly unstable business environments such as in computer manufacturing. Dynamic networks embody the same form of outsourcing as stable networks. However, the relationships are more flexible and responsive due to the fast-changing business environments they operate. (Campbell 1999, 22)

The web enterprise is the final form of virtual organization (and a new form of business enterprise) shaped by its information flows. The web aggregates the critical resources from number of partners to create and deliver continuous streams of innovative products/services to the marketplace. The business environments in which the web networks operate are characterised by a high degree of change and the need to transfer knowledge throughout its network relationships. (Powell & Brantley 1992, 389; Campbell 1999, 23; see also Lorenzoni & Baden-Fuller 1995)

Campbell's (1999) classification on the forms of virtual organizations reveals implicitly the importance of studying collaboration. We can notice that the complexity seem to increase when moving from the internal networks towards the web enterprise. As the complexity increases, the networks of relationships become more and more critical. It has been argued that social networks help organizations to recognise opportunities or challenges and co-ordinate appropriate responses. Hence, by focusing on responses we can study the informal

structures of organizations and maybe pinpoint the networks of collaborative relationships that the members of virtual organizations create to get things done.[4]

Types of social networks

The social network perspective focuses on human interactions and especially on the influence of different relationships on the behaviour of the network members.[5] Thus, virtual social networks are social systems where people are working across space, time, and organizational boundaries with links strengthened by ICTs (see e.g., Wellman et al. 1996).

Figure 2 illustrates three social network types from the responses' viewpoint. These types can intersect and change depending on the situation and the context. First, *Customised response*, refers to social networks in which complex problems are solved in innovative ways. These networks could be found e.g., in R&D departments. The network connections are wide and diverse both internally and externally. Hence, permeable organizational boundaries allow individuals to interact frequently with each other and to share information both face-to-face and electronically. The members of these networks have usually same frame of references and their expertise is the source and indicator of trust. (Cross et al. 2005, 126-128) Following Campbell's (1999) classification on the forms of virtual organizations, these social networks could be found somewhere between the dynamic network and web enterprise, especially there where the relationships are mostly based on knowledge and knowledge exchange.

Second, *Modular response* refers to social networks in which problems and opportunities are solved by identifying the individual components of a problem and co-ordinating expertise to address each one. When dimensions of the problem to be solved are more readily understood, it is not so important anymore to have dense internal linkages. Problems can be better solved by co-ordinating defined roles that any qualified actor can step into. (Cross et al. 2005, 127, 129-130) For example in a cardiac operation, one nurse can be replaced by another. As being a qualified nurse, is the sign for others of having relevant expertise to replace some other nurse during the operation if necessary. Because each member in surgical team knows what to expect from the particular positions, trust is easily established, enabling fast co-ordination among relative strangers.

Finally, networks found in environments where the work is standardised (e.g., call centres), are called *Routine response*. Here, problems and their solutions are well defined and predictable. Internal connections are intentionally designed and focused on the process flows, and external connections are very limited. (Cross et al. 2005, 127, 130-132) According to Campbell (1999), this type of social networks is likely to be found among internal and stable networks.

4 This of course, is a matter of empirical investigation.

5 Social network theory views social relationships in terms of points (nodes) and paths (ties). Nodes represent the individual actors (e.g., individuals or organization units) within the networks and paths represent interactional sequences, relationships, between the actors. There can be many kinds of ties between the nodes. According to Scott (2000, 11), in a typical network there are ties connecting some nodes while connections between some other nodes are missing.

	Customised Response	Modular Response	Routine Response
Best for:	Solving ambigious problems that need innovative solutions	Solving complex problems where components of the problem are known but the sequence of the solutions is not	Solving familiar problems with known responses
Value is derived:	In the problem's rapid framing and innovative resolution	In establishing and delivering the correct constellation or sequence of expertise	Through efficient, consistent responses to a set of established problems
Network connections:	Are dense and redundant, both internally and externally	Are focused on roles through which different parties can rotate; external connections are targeted to inform aspects of response	Are focused on process flow; external connections are limited
Trust:	Is placed in other's expertise	Is placed in role occupant	Is placed in process execution
Structure:	Permeable boundaries (inside and ouside); decentralised decision rights and information access	Semi-permeable boundaries (specific cross-functional junctures and liaisons); role-based decision rights and information access	Defined boundaries; embedded decision rights and information
Work management:	Planning focuses on general markets and expertise; controls focus on output, not co-ordination	Planning focuses on constellations of expertise; controls focus on integration at point of delivery	Planning focuses on offerings; controls focus on efficiency and reliable delivery
Culture and leadership:	Collaborative within and across organisational lines, norms of generalised reciprocity	Shifting leadership, depending on domain; decision rights embedded in roles	Centralised decision making focused on standardisation and task accountability
Example:	High-end investment banks, consulting firms, corporate R&D departments	Law firms, commercial banks, surgical teams	Insurance claims processing depatments, call centres

Figure 2. Three types of social networks (Cross et al. 2005, 127. Modified.)

Contrary to Campbell's (1999) classification, these three social network types will bring us closer to the tasks the members of virtual organization perform and to the relations they have with each other to get things done. It seems that the complexity emerging from performing qualitatively different tasks (i.e., shifting from routine to expert work) is somehow related to the quality and quantity of social connections. Consequently, as the complexity of the tasks and activities increases, the more difficult it probably is to understand the real nature of these relationships and to pinpoint which relationships are the ones that create, maintain, and develop further collaboration in a virtual organization.

Benefits and barriers of collaboration

Potential benefits of collaboration

It has been widely argued that collaboration has positive effects on personal and organizational performance. For example, it has been suggested in the literature that collaboration between individual actors can help creating innovative working conditions, enhance greater learning and knowledge sharing. Moreover, words such as creativeness, well-being, flexibility, and openness have often been used to describe the positive outcomes of collaboration. (See e.g., Aram, Morgan & Esbeck 1971; Barrett 1998; Björkegren & Rapp 1999, 170; McLoughlin & Jackson 1999, 185; Miles et al. 2005)

According to Aram et al. (1971, 293), collaboration benefits both an individual and an organization. In addition, Khanna, Gulati and Nohria (1998) argue that two qualitatively different kinds of benefits available to actors in engaging exchange relationships can be distinguished. Hence, *private benefits* are those that an actor can earn unilaterally by picking up resources from its partner and applying them to its own activities. *Common benefits*, on the other hand, are those that accrue to each actor from the collective application of the learning that both actors go through as a consequence of their continuing interactions. (Khanna et al. 1998, 195)

Potential barriers of collaboration

While collaboration can create substantial value to an organization and its members, it has also some pitfalls. First of all, collaboration can easily be overdone. Prompted by collaboration initiatives, employees may begin to participate in all kinds of meetings in which nothing of substance is accomplished. Such unproductive collaboration may undermine the overall performance of the organization.

Huxham (1993) identifies three disadvantages of collaboration as following: *loss of control, flexibility*, and *glory*. These pitfalls accrue generally to individual organizations rather than to the system as a whole. In shortly, the loss of control for an individual actor and an increase in decision-making power for the collaborating actor's side will occur if the task is delegated to a collaborator party only. This can diminish the ability to take actions if things seem to go wrong or differently than was expected. Similarly, if there is no mutual understanding and commitment between collaborating parties, they may face opportunistic behaviour which – at the end – may cart all the flexibility and glory to one party only. (Huxham 1993, 604)

Moreover, Hansen and Nohria (2004) identify four different barriers which may prevent individuals from engaging in collaborative activities. The first barrier – *unwillingness to seek input and learn from others* – refers to structural hindrances for collective activities. There may be internalised norms and values[6] between organizations' members prohibiting collaboration, or formal and informal reward systems may promote more for heroic individual efforts than for collaborative efforts. Similarly, the members of an organization may have in-group bias, in which they overvalue their own group and undervalue non-members. On the other hand, even when individuals are willing to seek help across organizational boundaries, the may not be able to locate it or to search efficiently so that the benefits are outweighed by the transaction costs that will emerge. In other words, the second barrier – *inability to seek and find expertise* – may vitiate the efforts for collaborative action. (Hansen & Nohria 2004, 24-25)

The third barrier – *unwillingness to help* – emphasises the problem that lies with the potential provider of help, which can easily lead to a hoarding-of-expertise problem. Thus, competition between different profit centres can undermine people's motivation to co-operate. Finally, *inability to work together and transfer knowledge* refers to a problem where people are willing to work together but cannot easily transfer what they know to others because of

6 According to Katz and Kahn (1967) social systems are usually characterised by roles, which differentiate one position from another. Further, they are also characterised by a set of norms and values, which integrate, i.e., they are shared by all of the members of the system. Hence, system norms make explicit the forms of behaviour appropriate for member of that system. (Katz & Kahn 1967, 51)

"stranger" problem. In this case, the nature of the knowledge in question requires that people already have relationships in order to understand each other. (Hansen & Nohria 2004, 25-28)

Concluding remarks

This paper has studied collaboration within a virtual organization's social networks. The aim was to describe and discuss the conditions of virtual organizations and social networks as a way to pursue collaboration. Moreover, a tentative model for describing the development of collaboration as a cyclical process was proposed with the overall discussion of potential advantages and hindrances of collaboration.

According to the literature, different forms of virtual organizations and types of social networks can be identified. However, the dimensions used to describe virtual organizations and social networks differ from each other. In this paper, we discovered that dimensions used to describe virtual organizations do not reveal us how the virtual organization actually functions. So, to understand better the functioning of virtual organization, we proposed that behavioural perspective – social networks – should be scrutinised. The social networks approach will bring us closer to the tasks the members in virtual organization perform and to the relations they have with each other to get daily things done and thus, we are able to study collaboration. The complexity emerging from performing qualitatively different tasks is related to the social connections in virtual organization. Consequently, the increase in complexity related to the actors' tasks and activities blurs the understanding of the nature of the relationships members create, maintain, and develop in virtual organization.

In this paper, we understood collaboration as an advanced form of co-operation; it is a virtual process of working together for a common purpose in which collaborating parties are truly motivated and oriented towards their partners and vice versa. However, successful collaboration between individuals will require substantial time commitments, very high levels of trust, and extensive areas of common playground in order to transform successful co-operative processes further into collaborative processes. Thus, the strength of ICTs to offer potential playgrounds for creating, maintaining, and developing co-operative processes into such processes in which members' of virtual organization are as committed to others' interest as they are to their own is still a question and a matter of empirical investigation.

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