Virtual Teams: The role of Leadership in trust management

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Introduction

Trust in virtual environments becomes an increasingly important and accepted topic in both Computer-Supported Cooperative Work (CSCW) and in e-business research. In virtual collaboration, trust is identified as a key factor for successful interactions and is associated with cooperative behaviors, coordination, and high performance of virtual teams (Jarvenpaa et al., 1998; Jarvenpaa and Leidner, 1999; Kanawattanachaï and Yoo, 2002). However, the specific characteristics of the virtual context inhibit its establishment and development. This derives from virtual teams members' reliance on Computer-Mediated-Communication (CMC) that eliminates the face-to-face interactions, physical proximity, verbal cues, and facial expressions that

contribute to interpersonal relationship development (Bell and Kozlowski, 2002; Dubé and Paré, 2002; Handy, 1995; Townsend et al., 1998). This is why most studies consider the virtual context to be a barrier to trust building, and attempt to face this problem by identifying factors facilitating trust building in virtual teams.

Current literature on the topic shows that leadership plays an important role in fostering trusting relationships between remote members. Many studies have revealed that effective leaders develop high levels of trust, which in turn results in high performance in teams (Jarvenpaa et al., 1998; Kayworth and Leidner, 2001/2002). Yet, less is known about how e-leaders build and reinforce trust in virtual teams, as well as the mechanisms helping them to do so. Previous studies state strategies and determinants for establishing trust without specifying leaders' contributions, despite their important role in dealing with challenges facing virtual teams.

In addition, they do not take into account the characteristics of different virtual teams' configurations, rather considering them as a single type. On the other hand, they neglect the specific form of trust that develops in virtual teams, which is swift and *ex ante* (Iacono and Weisband, 1997; Jarvenpaa et al., 1998).

Our purpose is to identify e-leaders' roles and behaviors related to trust management and development based on the current literature on both trust and leadership in virtual teams. To serve this purpose, this chapter will begin by clarifying the concept of virtual teams through identifying their specificities and their implications on various forms and dynamics of trust. The second section will analyze characteristics of trust in the virtual context. It will be primarily a question of swift trust, a specific form of trust that develops in temporary systems (Meyerson et al, 1996). We then shall explain how e-leaders implement mechanisms and strategies for building and

maintaining trust in their teams through their functions, roles, and behaviors. A body of relevant managerial practices for trust management will be presented simultaneously with these developments. The conclusion will sum up our findings and present some limits and potential future extensions.

Background

1. Towards a better understanding of virtual teams

A critical literature review on virtual teams reveals noteworthy limits concerning their definition and the identification of their characteristics and specificities (Bell and Kozlowsky, 2002; Cascio, 2000; Jarvenpaa and Leidner, 1999; Larsen and McInerney, 2002; Lipnack and Stamps, 1997; Lurey and Raisinghani, 2001; Montoya-Weiss et al., 2001; Townsend et al. 1998). These limits result from the confusion existing between virtual teams and other virtual work forms, as well as from considering virtual teams monolithically, different from traditional teams yet with similar characteristics.

In addition, virtual teams are different from virtual groups, virtual communities, virtual organization and telecommuting (Dubé and Paré, 2002). All of these work arrangements nevertheless share a common element, the computer mediated communication allowed by information and communication technologies (ICT). These forms of work differ in their objectives, nature of relationship, work organization, and size. To better apprehend these differences, we refer to Katzenbach and Smith's (1993) definition of a team as: "*a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable*" (p.

112). This definition emphasizes four dimensions in defining a team, namely: the number of individuals, interdependence, common goals, and shared responsibilities. Given these elements, we can define virtual teams as a group of more than two interdependent individuals, separated in space and time, using ICT to achieve a common short-term or long-term goal (Townsend et al., 1998). With regard to this definition, we can first distinguish virtual teams from traditional teams and second, from other virtual arrangements. Indeed, the two distinctive dimensions of virtual teams are their substantial use of ICT and the distance between team members (Massey et al., 2003; Maznevski & Chudoba, 2000; Montoya-Weiss et al., 2001). These two characteristics justify the virtuality of teams.

Moreover, we can distinguish virtual teams from: a)- virtual groups, which do not have interdependent members, b)- virtual communities, whose members do not share responsibilities nor common goals, c)- virtual organizations, which are bigger in size and can be composed of many virtual teams (Markus et al., 2000), and d)- telecommuting, which involves only one individual and thus eliminates the collective dimension of virtual teams (Dubé and Paré, 2002).

Considering virtual teams as a single, uni-dimensional category impoverishes the concept and reduces the significance of study results adopting this approach. Indeed, initial first research on the topic considered that the short lifecycle, the temporal and spatial dispersion of members, and their reliance on information and communication technologies to accomplish collective tasks were the main characteristic of virtual teams (Townsend et al., 1998; Zigurs, 2003)[1]. However, these researches did not take into account what creates distinctions between various virtual teams, and they overlooked the existence of several possible configurations.

To fill this gap, recent studies have adopted a multidimensional approach to describe and analyze issues related to virtual teams and their management. They assume that they may be constituted according to multiple modalities and generate many types of virtual teams. For this purpose, some studies use taxonomies to enrich their approach (Bell and Kozlowski, 2002; Casio and Shurygailo, 2003; Dubé and Paré, 2002; Jarvenpaa et al., 1998). They assume that the variability of virtual teams' characteristics can generate several configurations. Each configuration has its own characteristics which determine both the way the team works and the nature of its organizational mechanisms.

We find that the two most relevant taxonomies are Bell and Kozlowski's (2002), and Dubé and Paré's (2002). Indeed, they introduce and explain several types of virtual teams contrary to other typologies which concentrate on only one type characterized by short lifespan, dispersion and high interdependence between members and reliance on CMC (Casio and Shurygailo, 2003; Jarvenpaa et al., 1998). In the first typology, the authors establish four criteria to define different types of virtual teams: lifespan, time-distribution, a team's organizational, functional and cultural boundaries, and member roles. They also introduce the complexity of the task as a key variable in the nature of the team as it influences and shapes all the other criteria (Bell and Kozlowski, 2002: p.30). In the second one, Dubé and Paré (2002) identify the characteristics common to any virtual team, as well as those that can help determine different types of virtual teams. In the latter category, the authors introduce more criteria than the aforementioned: size, geographical scattering, duration of the task, shared prior experience, role of the members, nature of their relations, interdependence of activities, and cultural diversity.

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[1] According to Townsend et al., (1998), virtual teams are defined as: "*Virtual teams are groups of geographically and/or organizationally dispersed co-workers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task"* (p.18).

Both typologies admit that the team's nature varies along a continuum determined by the variability of their characteristics. A team can then be defined by any combination of identified properties. Two extreme cases are the archetype of the virtual team (short lifespan, members' geographical scattering, and intensive information and communication technologies use) and relatively permanent virtual teams (stable framework, unique role of the members, and real-time communication).

Despite the considerable contribution of these typologies, dimensions that they use doesn't really help to distinguish different type of virtual teams and may be common to many configurations of virtual teams such as cultural diversity or members' roles.. That's the reason why we propose another typology one that results from the comparison the two previous one. In our typology, we retain the following characteristics: geographical distribution, lifespan, interdependence and previous shared work experience. Among these characteristics, we tried to put together those that are common to the two previous typologies. Our choice was also guided by the role played by each of these variables in determining the design of the virtual team and by their impact on the nature and development of trust (Jarvenpaa and Leidner, 1999; Kanawattanachai and Yoo, 2002; Meyerson et al., 1996).

Like Bell and Kozlowski (2002), we acknowledge from the outset that these criteria vary in a continuum taking different value (from high to low or from short to long) and resulting in different configurations that can consist of any combination of these criteria. Three representative configurations can be identified: traditional, hybrid and pure virtual teams. The following figure presents possible configurations of virtual team with the three representative cases:

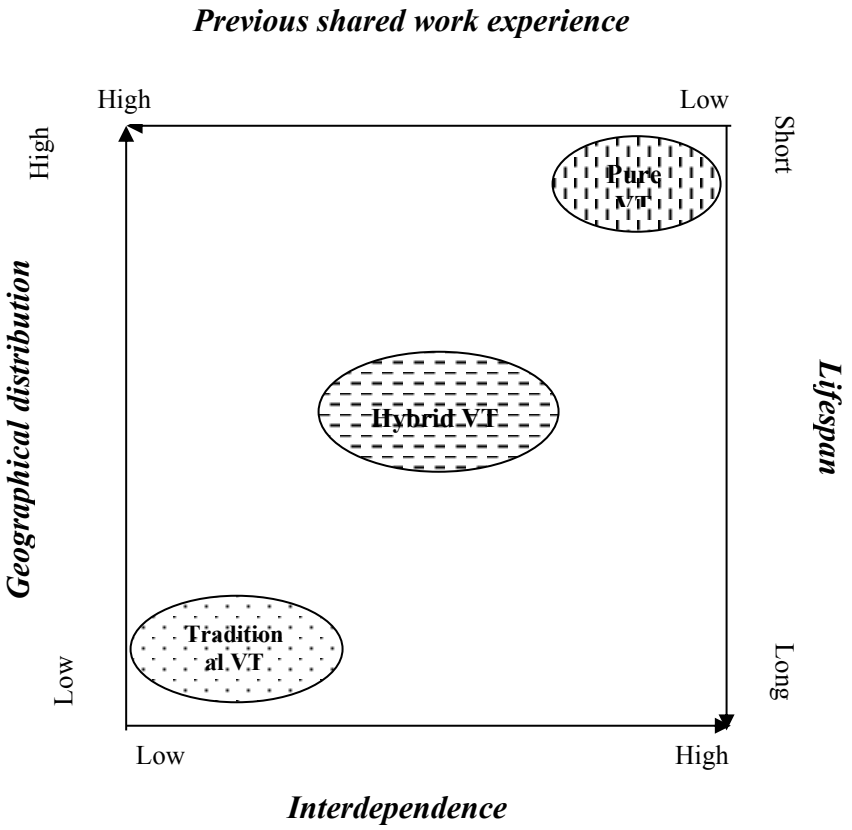


Figure.1: *A proposed typology of virtual teams*

1 First we find *pure virtual teams* whose members are geographically scattered, who do not know one another and never meet face to face. In this type of team, there is a strong interdependence and a short lifespan. Given these characteristics, it is this type of team which throws actual management models into question and calls for managerial innovation. We can find such a type in some R & D teams that are assembled by a company for a specific objective and that dissolve after accomplishing the task.

2 Secondly, we find *traditional virtual teams* whose characteristics are comparable to those of traditional teams. Members of such a team are dispersed but have already worked together in the past, have a long time period to achieve the task they were entrusted with

and rely heavily on information and communication technologies. The usual management practices are still valid and organizational mechanisms see their usual development modes unchanged. These teams are usually used by multi-national firms that have scattered sites and that adopt teamwork.

3 Thirdly, mixed or hybrid virtual teams share the characteristics of the two previous categories. In such a configuration, members can combine two modes of communication (face-to-face or CMC), they can share previous work experiences and have a moderate deadline for the achievement of their task. Some research shows that in practice, it is the latter type that prevails most of the time.

These cases are not the only ones as we can find other types which may for example have a short lifespan, be composed of dependant members that know each other but that are geographically dispersed.

The existence of several types of virtual teams has a considerable impact on the analyses related to the way they work and on the organizational processes that are developed. Indeed, a prevailing feature in the study of virtual teams is the notion that they form only one type diverging from traditional teams considering the existence of several types of virtual teams and the variability of their characteristics leads us to accept that their functioning and their organizational mechanisms can diverge according to their characteristics. This observation affects trust, its nature, and its dynamics. In the following section, we analyze to what extent trust is influenced by virtual teams' characteristics.

2. Trust in virtual teams

Trust is a key element to building successful interactions and to overcoming selfish interests. It plays an important role in the construction and stability of interpersonal relationships. Trust represents a means for coping with complexity and uncertainty in contexts where high levels of interdependence and interaction between different actors exist. It helps create a climate of cooperation and understanding both on the individual and collective levels. It also encourages citizenship behaviors and improves the quality of decisions made (Kanawattanachaï and Yoo, 2000; Mayer et al., 1995; McAllister, 1995; Ring and Van de Ven, 1992/ 1994).

Trust requires that specific conditions be met in order for it to appear and develop, such as physical proximity, mutual information exchange (Handy, 1995), time, a shared social context, common values, and similar cultures (Meyerson et. al., 1996). Yet if we refer to the specificities of the virtual teams' contexts, these conditions are not always met. Trust in virtual teams has indeed been regarded as paradoxical so far (Wilson et al., 2006). More precisely, "*One of the fundamental factors that are believed to be important in determining the success or failure of virtual teams is trust. […] This is because trust functions like the glue that holds and links virtual teams together"* (Wilson et al., 2006, p.188). In addition, the absence of physical proximity, a shared social context, and the limited lifespan of virtual teams themselves hinder the development of trust (Handy, 1995; Hummels and Roosendaal, 2001; Townsend and al., 1998). Underlying these results is the assumption that virtual teams are single entities. Yet, according to the typologies previously presented, these results cannot be applied to all types of virtual teams. This is why we suppose that the variability of virtual teams' characteristics entails the variation of the nature of trust and its development mechanisms.

Therefore, the conditions required for trust building (time, cultural similarities, physical proximity, and face-to-face interactions) are fulfilled in teams belonging to the second category (traditional virtual teams). As a result, it is difficult to confirm the paradoxical dimension of trust in these teams. However, it seems that trust takes a traditional form in these teams as all the factors required to its development through time can be found. Concerning the two other types (pure and hybrid virtual teams), a recent trend in research in the field has introduced a particular form of trust. "Swift trust" has been developed by Meyerson et al., (1996) to explain the behaviors of temporary systems' members. The analogy drawn between virtual teams and temporary systems finds its source in the similarities between the two notions. Temporary systems are indeed represented by " *group of individuals with various skills working together to achieve a complex task during a short period"* (Meyerson et al., 1996: p.168). Members of a temporary system do not know each other, they have never worked together in the past, and do not plan to do so in the future; there is a strong interdependence between them and the lifespan is limited to the achievement of the task. Unlike virtual teams, members of a temporary system communicate face-to-face.

These similarities have led some researchers to consider that trust develops swiftly in pure and hybrid virtual teams (Jarvenpaa et al., 1998; Kanawattanachaï and Yoo, 2002). Swift trust can be defined as follows: "*o trust and to be trustworthy within the limits of a temporary system means that people have to wade in on trust rather than wait while experience gradually shows who can be trusted and with what. Trust must be conferred presumptively or ex ante"* (Meyerson et al., 1996: p.177).

Swift trust in virtual teams has not been sufficiently explored. Researches in this area are limited and lack empirical bolstering and applicability. Yet, an analysis of the few studies which

have been thus far carried out enables us to identify the characteristics of swift trust and the factors influencing its development. According to its definition, swift trust is based on an assumption that occurs right from the start. Indeed, in virtual teams, members do not have enough information about each other. Moreover, they do not have time to collect the information that would help them assess other members' behavior. For this reason, they suppose that other members are trustworthy in order to limit the uncertain and risky dimension inherent to the opposite hypothesis. They then discover later if their presumptions were right or wrong (Meyerson et al., 1996).

Concerning its development, Jarvenpaa et al., (1998) has shown that swift trust has the same determinants as traditional trust: ability, benevolence, and integrity. Nevertheless, these determinants do not follow the same evolution in both cases. In the virtual context, ability and integrity are more important than benevolence during the first stages of a team's creation. These variables may intensify or weaken as the work progresses, depending on the information collected by members.

On the other hand, Kanawattanachaï and Yoo (2002) identified two dimensions of swift trust: cognitive and affective. They appear to agree with Meyerson et al. (1996) when they characterize trust as a "*depersonalized form of action"* to express the predominance of the cognitive dimension over the affective one. It indeed develops under the effect of actions and achievements rather than feelings. "*Feelings, engagement and exchanges are less important than actions and the achievement of the task"* (Meyerson et al., 1996: p.180). In addition to these factors, swift trust operates through social and psychological mechanisms and cognitive processes related to categorization and the creation of stereotypes imported from similar working situations and applied to the virtual context (Jarvenpaa and Leidner, 1999; Meyerson et al., 1996, Zigurs, 2003).

In this regard, swift trust is more task-related than socially-oriented (Cascio and Shurygailo, 2003; Iacono and Weisband, 1997; Johnson et al., 2002; Yoo and Alavi, 2004). Its development relies more on actions related to activity planning and achievement, deadline respect, and task distribution than on social exchanges and interactions. Jarvenpaa et al., (1998) identified strategies and behaviors facilitating trust reinforcement and performance enhancement in virtual teams. They include: the style of actions, the focus of dialogue, team spirit, tasks' goal clarity, role division and specificity, time management, patterns of interaction, and the nature of feedback. Although leaders' contributions to establish these strategies were not analyzed in this study, it would seem that leaders play an important role and have made considerable contributions in trust building. Based on the results of the aforementioned study and others analyzing leadership roles, we attempt in the following section to provide some insight into how leaders manage trust in the virtual context.

3. E-leadership and trust management in virtual teams

New parameters for virtual contexts introduce considerable changes in leadership. E-leaders have to deal with challenging issues generated by a distortion of the communication processes, member diversity, technology problems, and, in some cases, time pressure. "G*iven these challenges with communication, technology, logistics, and culture, […] virtual environments may be more complex than their traditional counterparts"* (Kayworth and Leidner, 2001/2002). Leadership nevertheless remains a social influence process for producing a change in attitudes, feelings, thinking, behavior, and/or performance with individuals, groups and/or organizations (Avolio and Kahaï, 2003; Avolio et al., 2001). These elements are mediated by information and communication technology, as they are the main means of interaction in the virtual context. E-leadership styles and functions have to change and integrate virtuality in order to be effective and

to ensure virtual teams' success and performance.

For E-leaders, trust becomes particularly significant and is highly emphasized for relationship building, especially given that control mechanisms existing elsewhere lose their importance and become inoperative. Trust becomes an essential factor for ensuring cohesion, cooperation, and citizenship behaviors among team members. This is precisely why it is important to establish the conditions required for its proper its development.

As discussed above, trust in virtual teams takes a particular form where it develops swiftly and where factors influencing its maintenance are different from those of traditional trust-building scenarios. E-leaders have to take them into consideration when formulating strategies for building and reinforcing it.

Consistent with behavioral complexity theory on leadership in traditional organizational settings, leaders have to develop a portfolio of complementary and at the same time paradoxical roles and behaviors to manage their subordinates and to be effective. These roles are: innovator, broker, producer, director, coordinator, monitor, facilitator, and mentor (Denison et al., 1995). Yoo and Alavi (2004) validate behavioral complexity theory in virtual contexts in their study of emergent leaders, and noted that e-leaders differ from other team members by their roles of initiator, integrator, and scheduler. For example, e-leaders were the first members that send e-mails to constitute the teams. They also plan work, encourage other members to respect deadlines, intervene to resolve problems,…

The results of the study reveal that e-leaders are most concerned with three main fields of team management: task achievement, individual team members' needs, and team cohesion. All of these factors either directly or indirectly influence trust management. The remainder of this section

explains how e-leaders build and maintain trust via these factors.

First, as swift trust is more related to "*doing*" than "*feeling"*, it is influenced by interactions focused on activity planning and goal achievement. Hence, e-leaders have to schedule work, set deadlines, and control workflows in order to respect them. They also have to establish coordination mechanisms facilitating information sharing and work exchanges between team members as "t*he issue of coordination becomes more complex when virtual teams interact asynchronously*" (Paul et al., 2004: p. 317).

This implies that e-leaders must pay particular attention to technology problems. Indeed, accessibility and the effective use of information and communication technologies are the conditions required for ensuring proper work achievement as they are the exclusive, and sometimes the only means of communication in the absence of face-to-face interactions. In addition, e-leaders have to consider differences in time zones when preparing activities and organizing virtual meetings. Attendance of all team members or a majority of them is essential to resolving work problems, to explaining and clarifying task schedules, and to guaranteeing that there are no "free riders". In that way, e-leaders may be able to uphold a dynamic, positive, and optimistic team spirit that reinforces trust level (Jarvenpaa et al., 1998).

The second important intervention domain of e-leaders is that of individual team members' needs. This factor become increasingly important given the characteristics of virtual contexts. Indeed, virtual team members can feel isolated, as "*most of the interaction in virtual teams occurs not in physical places, but in electronic spaces"* (Sarker and Sahay, 2004: p. 4). They do not see nor know each other because of physical separation and electronic communication. This may create a feeling of isolation, inhibit their commitment to the team and their goals, and

damage potential collective social context- which naturally builds and fosters trust relations. This is precisely the reason why e-leaders' contributions are focused on managing and satisfying team members' needs.

For this purpose e-leaders must encourage social information exchanges between members to allow them to better know each other and to assess their behaviors. E-leaders have two main ways to do such. On the one hand, they can organize one face-to-face meeting at the least at the onset of the project. This meeting aims to introduce team members to each other and allows for social face time with colleagues. This also facilitates future electronic interactions and provides more visibility and vividness among team members (Zigurs, 2003). On the other hand, when holding face-to-face meetings is impossible, e-leaders may use team building exercises before the effective work begins which "*should not only reveal information about the members, but also create a team identity, which is an important facilitator of trust in a collective context"* (Jarvenpaa et al., 1998: p. 3). Team-building exercises can also be useful when e-leaders face time pressure in short lifecycle teams. In this context, leaders have to act rapidly to establish effective communication patterns and trusting relationships.

In addition to this, e-leaders can enhance member participation and commitment to the team by setting clear task goals and specifying role divisions and contributions for each member. Combined with immediate and substantial feedback, the previous actions help reduce the uncertainty prevailing in virtual context related to a lack of information about team members, and can increase beliefs that other team-mates will not take advantage of others' vulnerability. "*E-team trust follows from the beliefs and expectations that members have of each other, that each member will live up to agreed upon commitment, that each member is acting with good intentions on behalf of the group, and that each will work hard on behalf of the group*" (Zaccaro

and Bader, 2003: p. 382). The three behaviors described above were identified by Jarvenpaa et al., (1998) as those which reinforce strategies focused on increasing trust levels.

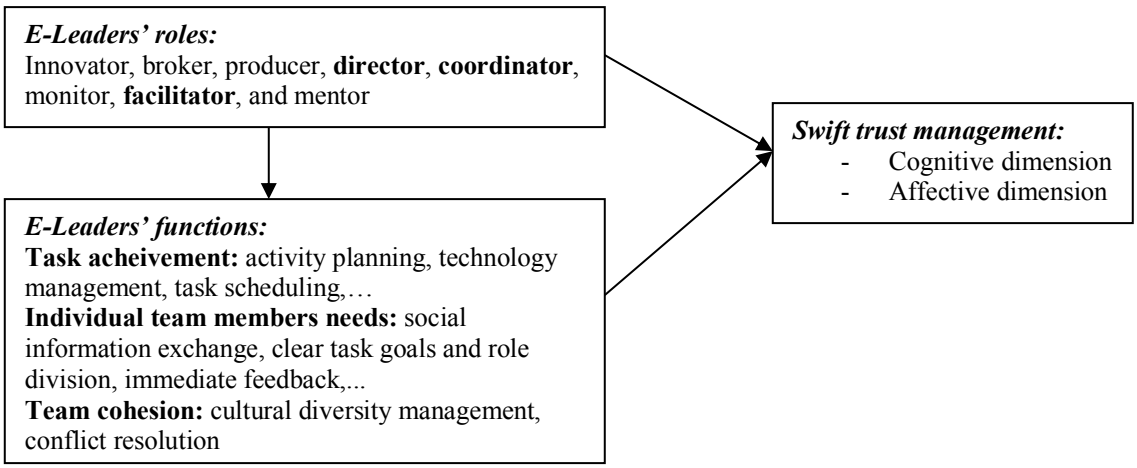
The third field requiring leaders' intervention is team cohesion management, which is specifically important given its direct influence on trust. Team cohesion management in virtual teams includes cultural diversity management and conflict resolution.

On the one hand, as virtual teams spread out over organizational, functional, and professional boundaries, they may be constituted by members from different cultures, which speak different languages, and which have different perceptions and referents. E-leaders have to deal with this diversity and find a common ground of understanding. They should establish a set of collective and accepted norms to guide task behaviors. They also have to intervene at the appropriate moment to resolve misunderstandings related to language barriers or conflictual perceptions. To avoid these problems, e-leaders can organize training session on cultural differences and language instruction at the pre-project level according to the resources available.

On the other hand, team cohesion management requires developing suitable strategies for conflict resolution. This implies the proper identification of conflict sources which can originate in the spatial and temporal dispersion of team members or from organizational and cultural diversity (Shin, 2005). To avoid the damaging effects of conflicts, e-leaders have to develop collaborative conflict management styles as identified by Paul et al. (2004) as the most effective strategy for conflict resolution in virtual teams especially heterogeneous ones. This strategy allows e-leaders and members to overcome problems that may hinder task progression and inhibit team performance. It enhances team cohesion as it contributes to creating a favorable climate for collaboration and cooperation directly related to trust.

The previous analyses reveal the importance of leaders' contributions in trust management in virtual teams as mentioned in the current literature on the subject. It appears that trust building in CMC requires leaders to adopt a wide variety of roles and behaviors necessary to accomplishing their job functions. In this regard, virtual teams do not differ from their traditional counterparts. However, some roles are more highly emphasized in the virtual context such as director, coordinator, and facilitator (Yoo and Alavi, 2004). They have also to pay particular attention to team dynamics and individuals concerning member satisfaction, task achievement, and team cohesion (Lurey and Raisinghani, 2001). These roles and functions can be summarized in the following figure:

***Figure.2:* Leaders' contribution in trust management within virtual teams**



As cognitive dimension is more prevalent in swift trust, e-leaders have to develop specific roles and functions ensuring its management. They are related to setting clear goals and tasks, developing coordination mechanisms that take into consideration geographical and temporal dispersion of members, encouraging social information exchange between members and overcome cultural barriers such language or different referent. Affective dimension of swift trust may become as important as cognitive one in late stages of the project, that's the reason why e-

leaders have to provide required conditions to its management. They have to encourage teams cohesion and to build and reinforce team identity and common shared norms. His roles of facilitator and innovator help him to do that. Collaborative conflict resolution strategies also contribute to interpersonal relation development including trust.

To achieve these objectives, e-leaders need to develop new skills specific to the virtual context in general and to trust management in particular. According to Cascio and Shurygailo (2003), these skills are related to virtual collaboration, virtual socialization, and virtual communication. Specialized and targeted training sessions for e-leaders are hence essential prior to a team's constitution.

Conclusion

The purpose of this chapter was to identify leaders' contributions to trust management in Computer-Mediated-Communication through an examination of virtual teams. We attempted to draw up an integrative framework based on the current literature on both trust and leadership in virtual teams in order to develop a body of relevant managerial actions.

While there is currently a lack of research on the topic, it is growing in fields such as information systems or organizational behavior. For this reason some limits must be addressed and may be further developed in future studies. First, it would be interesting to further clarify the two concepts of swift trust and e-leadership and better identify their distinctive characteristics in order to give more parsimony and robustness to research studying them. This implies a profound analysis of changes on team-based work introduced by virtuality with its two dimensions of intensive ICT use and distance.

Second, our developments were based mainly on findings of experimental studies conducted with university students. It would be interesting to test them in a real organizational setting and to check if these findings remain valid. Third, additional variables not analyzed here should be added in future extensions of leaders' contributions to trust management. We can mention, for example, influences in the style of interaction (Poltrock and Engelbeck, 2002; Potter and Balthazard, 2002), training programs (Beranek, 2000), or psychological mechanisms (Lee-Kelly, 2006). We can also consider the question in terms of the decline of trust in virtual teams in order to investigate its causes and e-leaders' role in managing it (Piccoli and Ives, 2003).

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Part V: Comments to the Editor

Please provide any comments or suggestions to the editor regarding your position concerning this chapter. (Note that these comments will not be shared with the author[s]).

Publishable, with elaborations as noted above. Would fit well in antecedents of trust section.