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E-leadership for project managers:

virtual leadership and trust-building for perceived project success

Master Thesis within Business Administration

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Master's Thesis in Business Administration

Title:	E-Leadership for Project Managers – Virtual Leadership and trust-building for perceived project success
Authors:	Alfred Park & Luminita Popescu
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Abstract

Background Globalisation has brought substantial changes to the global economic landscape and has intensified organisational leadership complexity. Therefore, the rapid global expansion and the fast-moving technology have increased virtual collaborations and created opportunities for organisations worldwide. Thus, many organisational projects are characterized by a certain degree of virtuality which developed the need for alternative leadership in a virtual context, a phenomenon more relevant as businesses move toward more non-traditional work.

Purpose The purpose of this thesis is to explore the leadership of project managers in a virtual setting, focusing on the challenges to virtual leadership, on trust building, and task- and relationship-oriented leadership behaviour for perceived project success.

Method Semi-structured interviews were used to assess leaders' behaviour in virtual projects, how trust was achieved and how the challenges specific to the virtual context affected perceived project success. Questionnaires were used as part of the triangulation technique in order to add the perspective of team members and increase the validity of results. Therefore, a mixed-methods design was employed.

Findings The results of this study revealed that technology affects communication through low synchronicity and social presence; cultural differences affect how team members perceive project goal achievement, and task-related conflicts have a positive impact on effectiveness. Moreover, trust was initially achieved through creating a unifying purpose for the members, whereas along the development of a project, the influence project leaders had on trust was often limited to the temporary nature of projects. Also, task-related leadership behaviour increases in importance at the beginning and end of a project and the relationship behaviour more in the middle stages. Shared leadership was perceived as beneficial for coordination of tasks but it did not apply to decision-making.

Conclusion E-leadership encounters challenges that increase task-related leadership behaviours and render trust-building difficult to achieve. However, the virtual environment creates opportunities that project managers should seek to foster and reduce the constraints of these challenges.

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CHAPTER 1

Introduction

This chapter introduces the concept of virtual teams and leadership and initiates the discussion on challenges facing e-leaders.

The gaps are identified and the purpose presented, which focuses on exploring the leadership of project managers in a virtual working environment.

1.1 Background

Globalisation is a phenomenon that has brought substantial changes to the global economic landscape and has intensified organisational leadership complexity (Sheppard, Sarros & Santora, 2013). The technological innovations have led to the shaping of a whole revolution in organizations around the world, where human interactions are now mediated by information technology (Cascio & Shurygailo, 2003). It is especially imperative in the context of global projects and geographically dispersed project teams to focus on the integration of information technology (IT) tools and to manage cultural diversity in dealing with project risk and complexity to improve efficiency, effectiveness, and innovation (Anantatmula & Thomas, 2010). Virtual teams are not something proliferating in today´s business only; the popularity will continue to increase in the future as well (Lee, 2014).

According to Nauman, Mansur Khan and Ehsan (2010), project management represents a growing field of research, and many organizations have teams characterized by a certain degree of virtuality. In addition, the increasing degree of virtuality emphasizes the need to understand the effectiveness of project management and its subsequent success (Nauman et al., 2010).
Zigurs (2003, p.40) defines a virtual team as "a collection of individuals who are geographically and/or organizationally or otherwise dispersed and who collaborate via communication and information technologies in order to accomplish a specific goal". The traditional team and the virtual team have in common the fact that they share common work, a product or project goal; and what differentiates them is that virtual teams often do this without physical interaction (Lee, 2014).
Thus, the need for leadership in a virtual team environment has become increasingly relevant as businesses move toward more non-traditional work (Cascio & Shurygailo, 2003). The key difference of virtual leadership, or otherwise called, e-leadership, compared to traditional leadership, is that it takes place in a context mediated by information technology. "E-leadership refers to leadership of those projects with virtual teams or teams that are not collocated" (Lee, 2014, p.4). The virtual environment brings up new leadership challenges, especially concerning communication. If these challenges are managed incorrectly, it may slow down the primary leadership functions such as communicating, influencing, decision-making and managing (Lee, 2014). One of the key factors for a successful performed project is the leader's ability to manage interactions between people.
Collaborating across cultures, geographies, time-lines and functions with the help of different information technologies represents the major challenge for the global project leaders (Moran & Youngdahl, 2008).

1.2 Problem Statement

Leading in the virtual environment poses challenges to traditional work groups in functional organizations and demands an alternative approach that requires the evaluation of the leadership competencies to manage at a virtual level (Lee, 2014). The question of 'How can I manage them if I can't see them?' (Cascio, 2000, p.81) is on-going and it reveals a set of barriers for the virtual team that affect communication and team relations such as unclear roles and responsibilities, management agenda and leadership style, expectations creep and unevenness in processes (Lee-

Kelley & Sankey, 2008). In addition, Avolio, Kahai and Dodge, (2000) argue that e-leadership will transform the models of leadership, and the way it is measured and developed in organizations, even though many aspects of leadership will also remain the same. However, Bell and Kozlowski (2002), cited in Nauman et al., (2010, p.639) claimed in their theoretical review of virtual teams that "there is little current theory to guide researchers on the leadership and management of virtual teams".

Given the challenges of a virtual setting, how should leaders ensure the success of their projects? Should they control processes or people? What skills, knowledge and attitude do they need in order to create an environment that fosters motivation, trust and enhances organisational effectiveness? How should leaders build relationships and social bonds within the team, given the temporary character of the projects and the use of technology? Also, one of Lee's questions (2014, p.15) remains unanswered: "How can the virtual project manager lead using management by walking around (MBWA) in a modern organization?" To current date and to our knowledge, there is limited research on leadership behaviour for virtual projects and these questions have not been adequately approached.

According to Goodbody (2005), less than 30% of virtual IT projects have been completed successfully. A successful project is defined by Kendrick (2012, p.117) as a "project that is implemented on time, within budget, and with the expected quality level defined by the customer(s)". However, besides the 'iron triangle' of time, budget and quality performance, qualitative variables (the project 'intangibles'- leader's behaviour, vision, values, trust, quality of relationships) are also critical for success (Lee-Kelley & Sankey, 2008, p. 51). Therefore, what skills and techniques should leaders develop to ensure that the projects are delivered on time, within budget and with the required quality to satisfy stakeholders?

The above definition of success encompasses objective measures of project success that are dependent on a set of external factors and might not represent the actual success perceived by project managers. Even if most definitions of project success include the triple criteria of time, budget and quality, according to Agarwal and Rathod (2006), a project is not fully successful or failure if seen from the eyes of the stakeholders involved in it. Moreover, the same outcome can mean different things to different people involved within the project. Therefore *perceived* success and *perceived* effectiveness of projects and leadership would be the wisest choice to a "more satisfying and correct picture of project performance" (Agarwal & Rathod, 2006, p. 369).

Hence, for this particular study, we will rely on project managers' perceived definition of project success, since assessing it based on the variables of time, budget and quality as well as on financial measures would be difficult to estimate and would leave out factors that could be essential for the purpose of this study.

In his study, Kostner (1996), cited in Lee-Kelley and Sankey (2008) claimed that a virtual leader has 'little or no power or control' over his team and that control is freely imposed by the members themselves. Nevertheless, Kayworth and Leidner (2001) observed in their study a dichotomy between team members wanting and expecting direction, guidance and motivation and team leaders who, faced with the constraints of distance, would prefer members to be more independent and self-managing.

Trust is important for all teams but especially for the teams that are acting virtually. Being highly connected with the cooperative behaviour in the team, trust is critical in order to be successful.

The diverse locations and the technology-based communication are factors that make trust more difficult to build (Greenberg, Greenberg & Antonucci, 2007). Therefore, given the distorted social context in which virtual teams operate, it is the leader's responsibility to build and maintain a social climate for the team unity and cohesiveness (Kayworth & Leidner, 2001).

As described above, there are ambiguous and sometimes opposite results concerning leadership in virtual teams. In order to support the growing body of research on virtual leadership, to further the current knowledge about the skills needed for achieving perceived effectiveness for virtual project success and create understanding of trust-building deemed as critical for team collaboration, we intend to carry out a mixed methods study to identify issues and offer suggestions which might be helpful to managers and academics.

1.3 Purpose

The purpose of this thesis is to explore the leadership of project managers in a virtual working environment.

The main research questions that will drive the study are:

RQ1: How do the challenges specific to a virtual working setting affect virtual leadership perceived effectiveness and perceived project success?

RQ2: How is trust accomplished in a virtual setting, given the temporary aspect of projects?

RQ3: How is leadership behaviour different in virtual projects compared to face-to-face projects?

CHAPTER 2

Analysis

This chapter is divided into two parts. The first part addresses the analysis of the semi-structured interviews with the Project Managers. The analysis is presented according to the following categorization: perceived project success, challenges of virtual projects, trust-building, and leadership behaviour.

The second part comprises the findings and analysis of the questionnaire sent to the project team members.

Next for each section 2.1, 2.2, 2.3, and 2.4 we present the analysis as a result of the seven semi-structured interviews with the project managers.

2.1 Perceived project success

In our interviews with the project leaders we relied on finding out the factors that in their perception contributed to project success and how they finally defined project success. The end-measurables of time, budget and quality (Kendrick, 2012) for project success mentioned in our theoretical framework were perceived by project leaders as the traditional way of measurement; but they acknowledged that attaining the main objective of the project was the most important success factor that they took into account, in spite of whether the criteria of time and budget were met. Also, the project leaders outlined the importance of the intra-measurables in assessing project success, such as leader's behaviour, communication, managing expectations, having the courage to stop or change the scope of the project as a way to remove potential waste of resources. Therefore, the emphasis on intra-measurables confirms that qualitative variables are also critical for success (Lee-Kelley & Sankey, 2008).

Finally, in assessing the effectiveness of project leaders' behaviour, opting for *perceived* project success was the best choice as confirmed by our empirical findings, since success was seen differently by project managers, relying on their own experiences and other external factors that might have influenced their perception.

2.2 The challenges of working with virtual teams

2.2.1 Technology and Communication

In our frame of references, Jansson (2005) mentioned that the barriers to successful communication in virtual teams consist in the functional failure of the technology and the need for team members to learn how to use certain technologies. From our empirical findings we conclude that projects leaders felt there was a lack of trainings concerning how to use the technology meant for communication and that they heavily relied on old methods such as phones, emails and video conferences in more special situations (first meetings, critical issues to solve). Therefore, we also confirm another theory that says that individuals focus on technologies that they know well, not particularly because it is the best way for a certain situation, but because it is convenient and does not require much initial effort in utilizing it (Jansson, 2005). This statement is also endorsed by one of the project leaders who mentioned: "*I think we should make more use of the video system that is in-house but I am an old guy so I hesitate to sit in front of the camera and make use of that*". Additionally, most of the respondents pointed out to the lack of an alignment between the technologies or internet coverage of the companies the leaders worked for and their partner/customer companies, or even among the team members dispersed. Referring to Figl and Saunders (2011), this means a low synchronicity of the technology which does not allow members to work effectively at the same time on the same task.
Finally, according to Figl and Saunders (2011) the technology used by our project members can be described as having low social presence and low richness and synchronicity. These findings are more surprising as the projects led by the project leaders were in the innovation and IT sector and also because of the high-technology world we are witnessing today.

Likewise, Rothbard & Pottruck (2013) address in the theoretical framework the idea that virtual communication may result in misunderstandings or loss of valuable information. Our findings support this theory, project leaders mentioning that virtual communication resulted in loss of bright ideas and represented a hinder to creativity because they were always arranged.

2.2.2 Cultural differences

In the frame of reference, according to Kerzner (2009), cultural differences can create more robust outcomes and distinctive advantages for those team leaders and team members who understand and are sensitive to the differences and also use it in a positive way. Our findings show that leaders particularly highlighted the importance of being *aware* of the cultural differences and being aware of it as a dominant factor affecting virtual teams. Also, in the literature we address Hafstede's five cultural dimensions which may have a great impact on the way members perceive things within the team. From all five, the project leaders outlined power distance as the most critical when it comes to the way members communicate. Moreover, cultural differences forced project leaders to be more explicit about the project goals but also monitor more often in order to see if the members were indeed clear about what they had to do as it seemed at the beginning. In our empirical findings we also came up with examples that support how culture can increase the complexity of leading virtually.

Furthermore an additional challenge which was not referred to in the theory was the language barrier that somehow is connected and influenced by culture. For some of the project leaders, language kept appearing as a significant variable that influenced the advancement of the project. According to them, there are cultures that have a low English level which emphasizes the leader's importance of language knowledge, since most of the time, with some of the team members the leader had to speak the local language. Otherwise, the language barrier might have caused greater misunderstandings that in the end may have caused failures.

Additionally, our results show that it is truly important to learn by doing but also to get knowledge from others that already have done business within a certain culture so that to enhance leaders' cultural intelligence and sensitivity. Cultures are distinct and project leaders underlined the importance of not judging the differences, but trying to learn from them instead.

Kezner (2009) explains in the frame of reference the importance of creating a team culture in which differences and problems can be discussed and surfaced. However, the project leaders did not address the importance of building a special team culture, due to lack of time and complexity of communication.

2.2.3 Conflicts

In the literature, Ferrazzi (2012) explains that there are two types of conflicts: task related and relationship related conflicts. In our findings we see that conflicts are common and the respondents are quite used to deal with them. We also noticed that the conflicts that project leaders described were mainly task-related, occurring because of wrong management of

expectations and high level of pressure as a result of the difficult-to-handle workload when approaching certain deadlines.

Additionally, our research findings show that conflicts had a positive impact on the project effectiveness and performance because they contributed to the team members growing stronger together and also understanding people and what was behind the surface. These findings confirm the theory by Ferazzi (2012) that task-related conflicts can lead to more effective ways of doing things and result in being healthy for the team and project effectiveness.

2.3 Trust-Building

Teams go through different stages during their lifetime. The different types of trust required in the virtual team stages are illustrated in Figure 2.1 (Greenberg et al., 2007, p. 328). It is essential that the team leader and the manager encourage the trust development at the beginning of the team formation and then foster trust all through the team´s life, during all stages. What makes this challenge even trickier is that during the different stages of life, trust seems to be based on a different assessment (Greenberg et al., 2007).

Figure 2.1: Type of Trust Required in Team Stages (Greenberg, Greenberg & Antonucci, 2007, p. 328)

Stage 1: Greenberg et al., (2007) mention that the way leaders could go in fostering trust in the first stage is through choosing the right people, offering training and creating a competitive reward structure. This stage refers to actions that project managers could take before the first interaction of team members. However, practically, as a result of our research, we found out that project leaders do not participate in the process of selecting the team members and that the selection is mainly based on technical skills and availability, with no emphasis on previous international experience or virtual work experience. The same applies to the reward structure; the project leaders are not aware of the monetary incentives the team members receive, thus, not being able to create the foundation for trust-building through designing the reward structure they would consider adequate for encouraging cooperative behaviour that would have a positive influence on trust.

Stage 2: In our theoretical framework, the importance of **initial trust** is emphasized due to the fact that generally the members have no past or future to reference to as the foundation of trust. Our respondents admitted the difficulties in creating trust at the beginning and referred to creating a **common purpose** for the team as the first step in achieving trust, in addition to promoting a culture based on respect towards everyone's skills and previous experience. According to Greenberg et al., (2007) at this stage, team leaders can reinforce trust by introducing

team members' main achievements, initiating team building activities to create cohesion and establishing communication rules. The respondents mentioned that introducing team members' previous achievements was not always or at all done because it depended on the cultural background of the members, if they saw it as important or not. Team building activities were highly encouraged by the project leaders during the face-to-face meetings but even if Greenberg et al., (2007) encourage virtual activities, these were lacking in the case of our respondents' experience. In addition, there were barely any formal rules of engagement within the teams, or if there were, they were not followed properly. Hence, at this stage trust building starts with emphasis on task and technical expertise and relies on the functional roles of the team members.

Therefore, within our research, compared to what was stated in the theory, we noticed that project managers start building trust at the inception stage of a project because their role as a project manager does not allow them to initiate trust building at the planning stage for the reasons explained in the first stage.

Stage 3: According to the theory supporting this stage, frequent communication, non-task related communication, monitoring of communication patterns and encouraging of participation are essential parts for trust-building within teams (Greenberg et al., 2007). What we identified as a result of the interviews was that respondents found it difficult to monitor how communication was flowing among team members. Instead of doing so, they ensured to be the link within the team by encouraging sharing of experiences, being open so that to create a culture where the issues were brought to the meetings and not the other way around. Also, participation was highly encouraged and seen as important to create a dynamic and trustworthy team. However, non-task related communication was lacking or limited to the face-to-face meetings, even though theory emphasizes its crucial role at this stage. Therefore, trust is **cognitive** and continues to be based on technical expertise, integrity and functional roles.

Stage 4: Theory says that trust should change at this stage from cognitive to **affective** (Greenberg et al., 2007). In order to do so, leaders need to show their availability, to acknowledge the team's performance and to provide guidance to complete the task. Availability was emphasized as vital by respondents as well, and was ensured by giving support to the team members in times of difficulties, by being prompt in their answers to the team members, and by being present and explicit in their communication. The need for guidance was assessed by the leaders as a result of the monthly meetings, interview controls, workshops, health check questionnaires and weekly status reviews. Also, acknowledging the team performance was accomplished through direct communication to the management, written nominations by the CEO or other ways of positive feedback.

One aspect not covered by theory but recognized as dominant in building trust at this stage was the effort leaders put into learning more about each individual's personality and background so to build up a personal roadmap to understand how every member reacted, behaved and what kind of support he or she needed.

Stage 5: As Greenberg et al., (2007) assert, at this stage, the outcome based on group performance plays a crucial role. Therefore, delays and missed deadlines communicate the low priority of the team task. However, our respondents had a different view on how delays affected

team trust. Meeting the deadline was perceived as a secondary factor in the cases it was done for the safe of quality or because new 'surprises' appeared along the way and there was the need of certain adjustments. Also, the virtual character of projects was challenging in terms of coordination which meant that modifications in the deadlines should not be seen as a barrier to trust. More emphasis was put by the project leaders on the celebration of interim deadlines which was considered more important than the final deadline. This practice is supported by Greenberg et al., (2007) who claim that celebration of interim deadlines helps to build strong social bonds needed for the positive assessment of members' benevolence, aspect deemed as vital at this stage.

In conclusion, achieving trust was perceived by team members to take time, and having the ability to learn how to handle diversity and empowerment. Also, as theory emphasized the importance of initial swift trust, Respondent E supported the statement by saying: "*maybe the first two meetings should only be about getting to know each other, getting to know your motivations, getting to know who you actually have in the team*".

2.3.1 Face-to-face meetings

In the literature we address the importance of having face-to-face meetings in the beginning of the virtual team's life cycle as one way for virtual teams to achieve high levels of trust (Brahm & Kunze, 2012). The project leaders emphasized the importance of initial face-to-face meetings in order to be able to get to know the team members, to get to know their motivations and build a first important impression of the team. Also, with our findings we support the claim that repeated face-to-face meetings are best when occurring at predictable times and intervals (Mortensen & O'Leary, 2012). In our case, these meetings represented an essential component in order to follow up on how the project was running, make a strategic plan for the next meetings, assess if any changes concerning the project variables had to be made; and they all occurred at least 2 times per year. Moreover, face-to-face meetings contributed to build trust and cohesion within the teams, since during those occasions the teams organized informal activities, team-building exercises and recognized the need of different members for support.

Finally, independent of the degree of virtuality of the team led by the project leaders, all the respondents could not think of a successful virtual team without having met at least once face-to-face during the project life. Therefore, we can draw the conclusion that the effectiveness of virtual projects is still highly dependent on the face-to-face interactions.

2.4 Leadership Behaviour

In our theoretical framework, researchers claimed that in a virtual context the importance of task-related leadership increases (Bell and Kozlowski, 2002; Davis, 2004, Griffith & Meader, 2004, as cited in Zimmermann, Wit and Gill, 2008). As a result of our research, the theoretical statement made was confirmed by our respondents. However, even though task-related behaviour increases, it should not outweigh the people-oriented leadership behaviour. Also, the contingency theory explains that the leader's behaviour depends on situational factors such as task and organizational conditions. However, in our study we identified that leaders' behaviour in most instances depends on the people in the team, on their background and experiences rather than the nature of the task.

Moreover, Hart and McLeod (2003) found out as a result of their field study that socio-emotional relationships or a people oriented leadership behaviour in virtual teams are built through intense and frequent task-related messages, rather than messages with "personal contents". We come to reinforce the conclusion of this study by outlining that frequent and intense communication, even though task-related, might be a way of contributing to the creation of cohesion within teams rather than personal or informal communication. However, according to Bass (1990), relations-oriented behaviour ensures a high level of trust within teams and a more certain way towards project success. In this sense, as part of their relationship-oriented behaviour, our respondents emphasized the importance of creating a climate where people were motivated to act, step in, be open and share ideas and thoughts. According to them, empowerment was the most suitable way to ensure effective leadership in virtual teams.

Derived from our empirical findings and with the aim of emphasizing the task and relationship-oriented leadership behaviour, we built up the following table that allows for an alternative understanding of the balance concerning task and relations-oriented behaviours.

Table 2.1 The Leadership Dimensions according to Stogdill applied to our study (Holloway, 2012, p. 12)

Task-oriented behaviours	**Relations-oriented behaviours**
Production emphasis – the respondents applied pressure when necessary and according to every individual's perception, personality and behaviour, so the pressure would not become a way of blocking (stress), but a way of unlocking.	*Tolerance of freedom* – great room for initiative and action. **Motivation and empowerment** – another component of the three critical leadership behaviours for project success. However, difficult to achieve because often, members were not interested or even afraid to step out of their role.
Initiation of structure – **management of expectations** mentioned as one of the three central leadership behaviours. Its complexity is fed by time difference, distance and culture, forcing a greater need for clarity and explicitness.	*Tolerance of uncertainty* – we refer to **change management** as another essential component of the three ones mentioned by project leaders. Leaders were able to tolerate postponements without anxiety which outlines their orientation towards maintaining good relationships with the members. Also, they emphasized the need to have a keen eye for the changes along the way and make the right adjustments.
Role assumption – shared leadership was beneficial for coordination of tasks but was limited and did not apply to decision-making.	*Demand reconciliation* and *Integration* were tackled successfully by being culturally aware of differences and by acting as intermediaries in case of conflicts.
Persuasion and *Superior orientation* identified as trivial.	*Predictive accuracy* – one of the reasons that delays were permitted, since in innovation projects, long-term accuracy was difficult to achieve.

From the above table we can observe how leadership behaviour was manifested within our research. Even if theory identified that task-oriented behaviour was more appropriate for achieving successful results, our leader's task oriented behaviour is more vivid at the beginning of

the project, by setting a clear and challenging goal for the team and if the tasks were accomplished according to the set milestones, the whole attention was oriented towards building relationships and foster communication that facilitated the smoothness of the project.

According to theory, shared leadership is thought to be particularly relevant for virtual teams, since team members are separated from the team leader and from each other, which leads to a need of a distribution of leadership functions (Shuffler, Wiese, Salas, & Burke, 2010). Our research confirms the importance of shared leadership in virtual teams as a facilitator for a better recognition and resolution of problems. Moreover, we would like to underline our two main conclusions concerning shared leadership in virtual project teams:

1. From the theories presented in the theoretical framework, we support with our findings the conclusion made by Hoch and Kozlowski (2012) in their study which claims that team members do not necessarily need to have the same leadership behaviour as their manager; rather shared leadership should be seen as the extent to which team members behave in ways as to stimulate the team processes which determine team performance. To further the conclusion of this study, we mention that shared leadership occurs in teams where members have good leadership skills and is accepted as a way to give members the possibility to experience the leadership role and feel empowered. However, team members' leadership roles are not equal to the project leader leadership role.
2. Even though theory states that shared leadership is more effective when tasks are independent and complex (Pearce, 2004), it does not apply to decision making, the overall leadership in this area being retained by the project leader.

2.5 Project team members' perspective

In order to present team members' perspective, we integrate together both the survey results and the corresponding analysis and discussion in correlation to theory and project leaders' assertions.

2.5.1 Background

The 32 respondents in our survey were based in 11 different countries or regions as presented in Table 2.2, which outlines the global dispersion across countries and continents of the team members. This also confirms that the virtual teams the members were involved in are geographically, organizationally, temporally and culturally dispersed.

Table 2.2 Location of Respondents

Country/Region	Percent
Sweden	28.1%
France	18.8%
Europe	15.6%
United States	12.5%
United Kingdom	6.3%
Chile	3.1%
Brazil	3.1%
Germany	3.1%
Colombia	3.1%
Asia/Pacific Region	3.1%
Peru	3.1%

Table 2.3 The Functional Role within the Team

Functional role	Percent
Project management	43.8%
R&D	43.8%
IT	25.0%
Information and research	12.5%
Finance	9.4%
Strategy and business development	6.3%
Risk	3.1%
Operations and production	3.1%
Marketing and sales	3.1%
Human resources	3.1%
Legal	3.1%
Procurement	3.1%
other	15.6%

In addition, concerning the amount of time respondents dedicated to working in virtual projects (Figure 2.2), 28.1% of the respondents indicated 60-80 percent of their time, followed by 25% of the respondents indicating at least 80 percent of their time, and only 18.8% of the team members reported virtual projects as the only way they worked. The other 28.1% of the respondents worked less than 40 per cent in virtual projects, the rest of the time being dedicated to traditional ones. This aspect is an important factor in our research, because it emphasizes the fact that team members were involved in both face-to-face and virtual projects, which leads to a better understanding of the challenges of working in a virtual setting. Moreover, that confirms leaders' assertions that they had to compete for their team members' time and dedication and therefore, their leadership behaviour was influenced by this aspect.

Referring to Table 2.3, 43.8% of the respondents indicated R&D as their functional role within the team, equally 43.8% had project management roles within the team and 25% of the team members detained an IT function. This underlines the fact that the majority of projects in our research study are innovation-oriented.

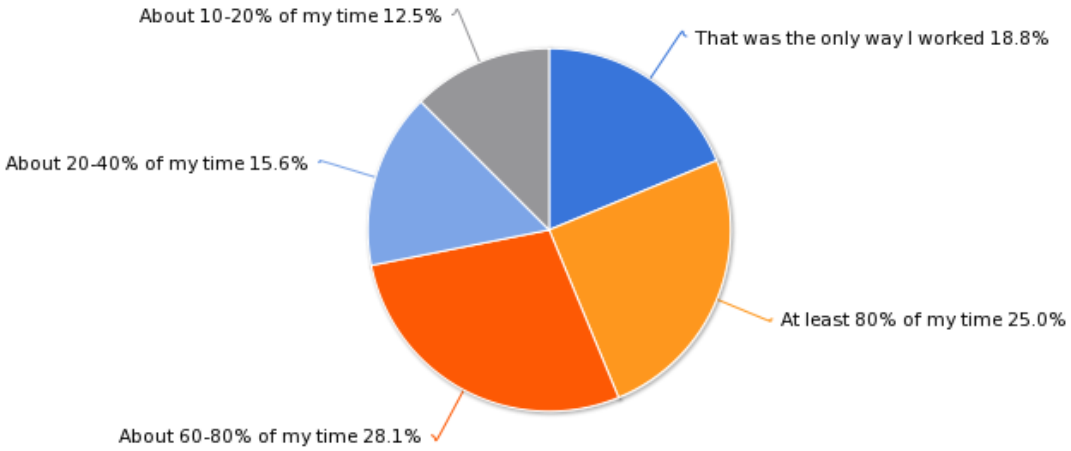


Figure 2.2 The Amount of Time Respondents Spent Working Virtually.

2.5.2 The challenges of virtual teams

According to the team members, the most challenging factor for virtual teams was time zones (50%). After time zone, it was quite equally divided between trust-building (43.8%) and coordination of tasks (40.6%). Slightly less challenging were the computer-mediated communication (34.4%) and cultural differences (34.4%). The factor considered the least challenging was language (25%). This comes in contrast with project leaders' assertions that differences in language proficiency did affect project effectiveness and created great barriers to communication.

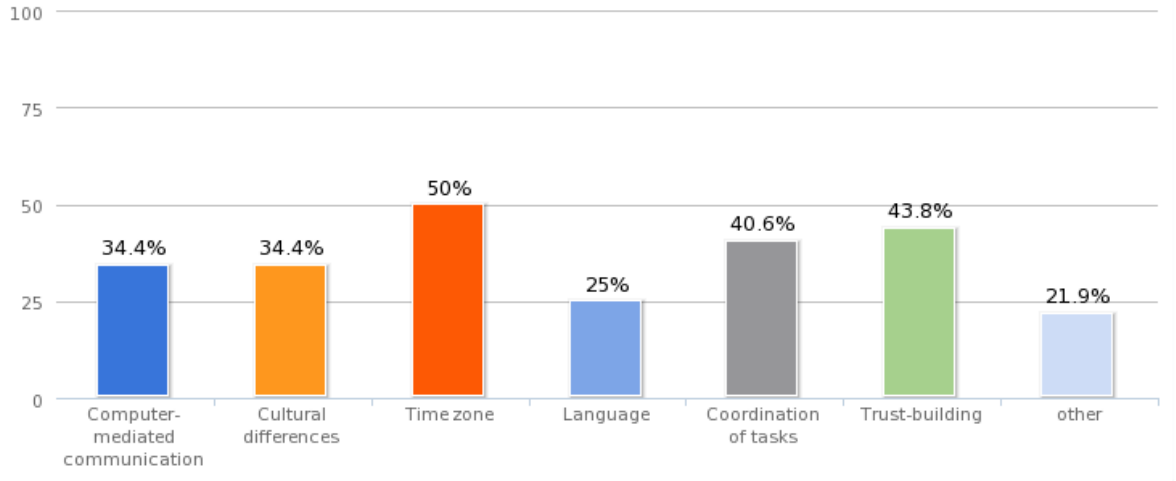


Figure 2.3 The Most Challenging Factors for Virtual Teams.

In the frame of reference, Martinelli et al., (2010) assert that for global teams, it is much more challenging to build chemistry and create bonds between members because of different time zones, computer-mediated communication and cultural diversity. However, concerning the differences in time zones, the leaders mentioned to have always succeeded to overcome the difficulties, by being always available and sometimes even sacrificing their personal time.

Surprisingly, team members still consider the differences in time zone to be the biggest challenge for their virtual team.
When asking the team members to add any other comment to this particular question, they added as challenges the following factors: "*leadership by remote*", "*follow-up and completion of tasks*" and *"working with cultural differences and strange atmosphere at the beginning of the project"*. These comments emphasize project leaders' claims that it is hard to monitor team members, to know what the people on the "other side" are doing and what they prioritize. Therefore, as the project leaders acknowledged, it is essential to have repeated face-to-face meetings during the projects to follow up on the progress made. Also, having face-to-face meetings at the beginning of the project facilitates trust-building and helps to dissipate the strange atmosphere that might be when forming the teams.

Another comment made by a team member addressed the challenge of "*creativeness in virtual meetings"*. This challenge confirms what was previously addressed in the empirical findings: "*everything within a virtual team needs to be arranged [...] which in a way hinders the input of creativity because not every bright idea comes at the moment you are having a meeting*" (Respondent E).

Additionally, another team member responded with the following statement:

"The team members had very different backgrounds, experience and personalities, e.g. some were entrepreneurs while others were extremely focused on details (this was both a source of irritation and strength). Several members worked full time on other projects".

This relates to Fisher and Fisher's (2011) claim that besides nationality differences, there are differences in education, background and personal life experiences that might lead to cultural misunderstandings and undermine effective work. Therefore, as Respondent G put it, only by acknowledging that there is a cultural difference within the team, you can make the best use of it. Moreover, the above statement points out to Kezner's (2009) affirmation that cultural diversity should be used in a positive way, therefore project leaders should focus on making the team members' background differences a source of advantage and strength rather than a source of irritation and conflict.

Further on in the questionnaire, 56.2% of the team members agreed or strongly agreed with having experienced misunderstandings or conflicts during the project, 28.2% disagreed or strongly disagreed and 15.6% were neutral. These findings tell us that that the majority of the team members recognized some kind of misunderstanding or conflict in their virtual team. This also confirms what has been previously mentioned by the project leaders that conflicts were something quite common, but that they were mainly task-related.

Concerning the most efficient tools used to communicate and collaborate within the virtual team, team members' opinions did not differ from their leaders' considerations. Therefore, 87.5% thought it was the Email, 81.3% - Web conferencing and 62.5%, fixed phones. However, derived from project leaders' statements these old communication tools were used because it was considered convenient by the project leaders and did not require much initial effort in utilizing them (Jansson, 2005).

2.5.3 Project success and leadership behaviour

Team members' perspective concerning the factors influencing project success is aligned with leaders' perspective in that clear objectives, roles and responsibilities is one of the most vital elements for ensuring successful projects. Besides clear objectives, roles and responsibilities for which 96.9% of the respondents agreed upon, the other two factors deemed important to contribute to project success were the project spirit such as trust, good communication and leader's ability to empower (78.1%) and stakeholder and customer satisfaction, with a much lower percentage of 31.3%. Surprisingly, even though seen as challenges for working virtually, cultural understanding and adjustment (25%) and the successful integration of information technology tools for communication (18.8%) were not perceived by the team members as having a great contribution to project success, unlike their project leaders.

Referring to Question 6 in Appendix 2, 75% of the respondents described their leader as focusing on accomplishing the task, 71.9% as motivating and empowering and 68.8% saw their project leader as focusing on people and creating relations among team members. This way of leading was considered by the team members as suitable and efficient for leading virtually, with strongly agreeing (59.4%) or agreeing (31.3%) with it. The balance of task and relations-oriented behaviour is aligned with how leaders described their way of leading, with a task-oriented behaviour more explicit at the beginning of the project, by setting a clear and challenging goal for the team and switching orientation afterwards towards building relationships and fostering communication.
Moreover, Zimmermann et al., (2008) concluded in their study that most task-oriented leadership behaviours become more important as the degree of virtuality in the team members' daily work increases. Figure 2.4 shows the correlation between the task-oriented behaviour of leaders as perceived by team members and the degree of virtuality of members' daily work activities. What we could notice is that the members less involved in virtual activities (40% or less) indicated their leader being equally focusing on task and relations. At the same time, while the degree of virtuality of activities increases, also the task-oriented behaviour of leaders becomes more important, therefore confirming Zimmermann et al.'s (2008) study results.

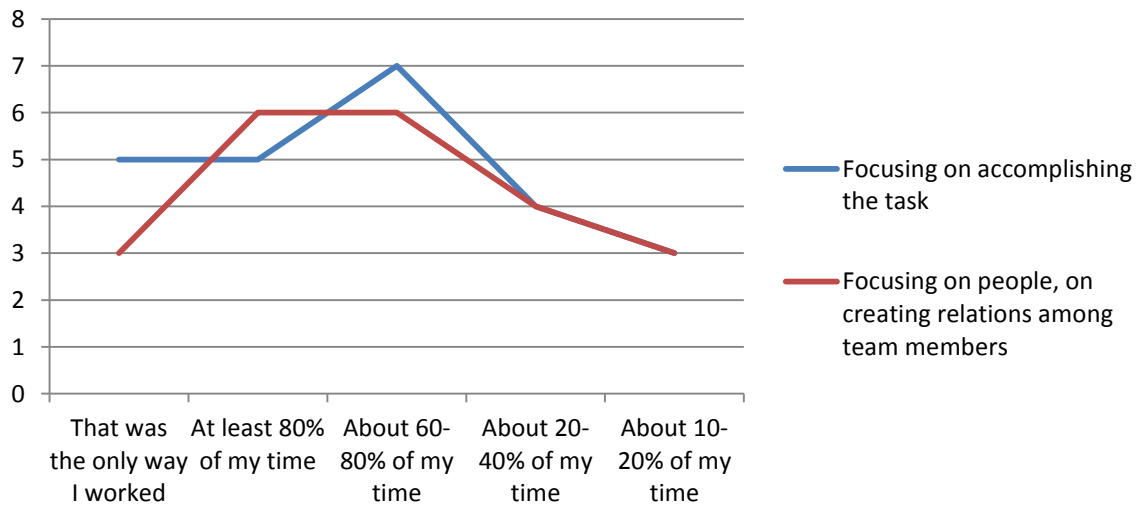


Figure 2.4 Correlation between the Amount of Time Members Work Virtually and Their Perception of Leader's Behaviour.

2.5.4 Trust-building

Greenberg et al., (2007) assert that in the first stage of the development of the teams, cognitive trust plays a major role since members tend to rely on each other's competences and performance integrity. The team members in our study strongly agreed (71.9%) or agreed (25%) with trusting their team colleagues' knowledge and expertise. Even though this type of trust is important at the beginning, it is not enough to ensure that trust will develop. Therefore, going to later stages in the project team's life, the members did not feel to the same extent that they could rely on their team colleagues' help or support: 53.1% strongly agreed, 28.1% agreed, 9.4% disagreed and 3.1% strongly disagreed that they could rely on the other team members for help or support. This slight disparity between trusting the knowledge and expertise of the team members and trusting to rely on the other team members for support might represent a problem of lack of social bonds within the team (Greenberg et al., 2007). Moreover, as leaders pointed out to the great uncertainty that characterizes projects, social communication should be taken more into account. As project leader D mentioned:

"*Our projects are born out of the uncertainty that exists, risk for example. We take on our portfolio things that have never been done before, so there is a belief that they cannot be done again or will not be done. So it's a blend of certainty and inspiration: that's our focus.*"

Furthermore, leaders mentioned that at the initial stage of the establishment of the teams, they did not follow a very organized or detailed introduction of the team members to each other due to the fact that some of the members knew each other from previous projects, or due to cultural aspects. In answering the question of how well they felt they knew the other team members, 34.4% of the respondents strongly agreed and 40.6% just agreed. While this information confirms leaders' attempt to be the 'glue' among team members and facilitate the process of getting to know each other, 21.9% were still neutral and 3.1% disagreed with the statement. The results indicate that there is a need for improvement for trust-building in the stage of team establishment.

As covered earlier, non-task communication is an important element of building trust in stage three of a team's life. Interestingly enough, when asked if they often exchanged information on topics other than work (eg, personal interests), 43.8% of the respondents were neutral, 9.4% disagreed and 3.1% strongly disagreed (Figure 2.5). Therefore, just 34.4% of the respondents acknowledged having exchanged non-task related information. However, this result is aligned with leaders' assertions that it is challenging to have informal communications due to time constraints, the unwillingness of members to make an effort due to the temporary aspect of the projects or just because virtuality makes it more difficult. These aspects, if not addressed might pose difficulties to building trust and ultimately may have a marked impact on performance.

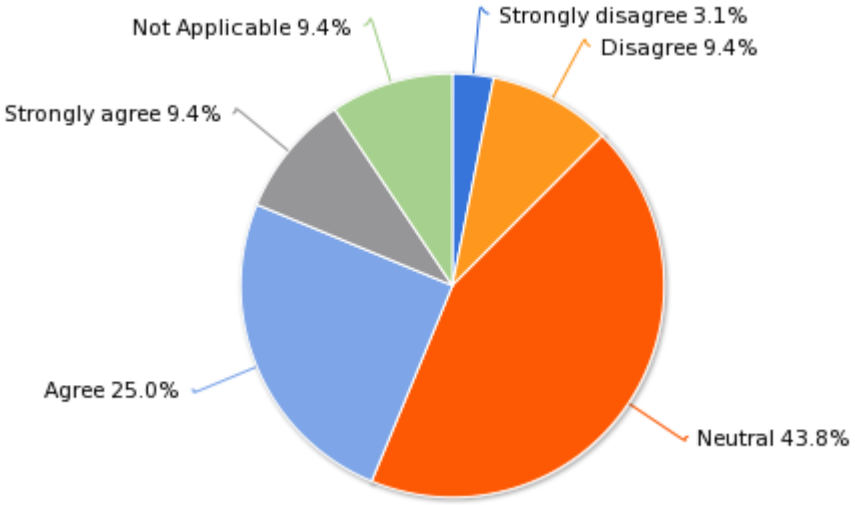


Figure 2.5 Exchanging Non-task Related Information (eg, personal interests).

All the respondents were positive about having clear roles and responsibilities assigned within the team (Question 9, Appendix 2, M: 4.4 SD: 0.9) they upheld the statement that the leader replied promptly to their questions and inquiries (Question 10, Appendix 2, M: 4.5; SD: 0.8) and that their achievements were acknowledged individually and within the team (Question 13, Appendix 2, M: 4.4; SD: 0.9). These findings go in line with leader's claims concerning clarity of roles and tasks as main determinant of project success, with their emphasis on being available and acknowledging publicly the efforts and achievements of team members. These factors are according to Greenberg et al., (2007) essential for nurturing trust and reduce the complexity of managing virtual teams.

Concerning the implementation of communication guidelines which are effective for reducing uncertainty and increase trust (Greenberg et al., 2007), the project leaders were not relying on formal communication guidelines: "*no formal guidelines, we get very used to it – everyone is used to having these meetings and it is getting better and better*" (Respondent F). Or Respondent G claimed that "*there is no rule when and how we should communicate; there is always a rule that we have to communicate*". Only two project leaders mentioned having implemented rules of communication. However, 40.6% of the respondents in our survey strongly agreed and agreed (43.8%) with the statement that their project leader did implement communication guidelines within the team (Figure 2.6). Moreover, 12.5% were neutral and just 3.1% disagreed. These contradictory views may be due to team members' perception of communication guidelines, considering both formal and informal guidelines when answering the question.

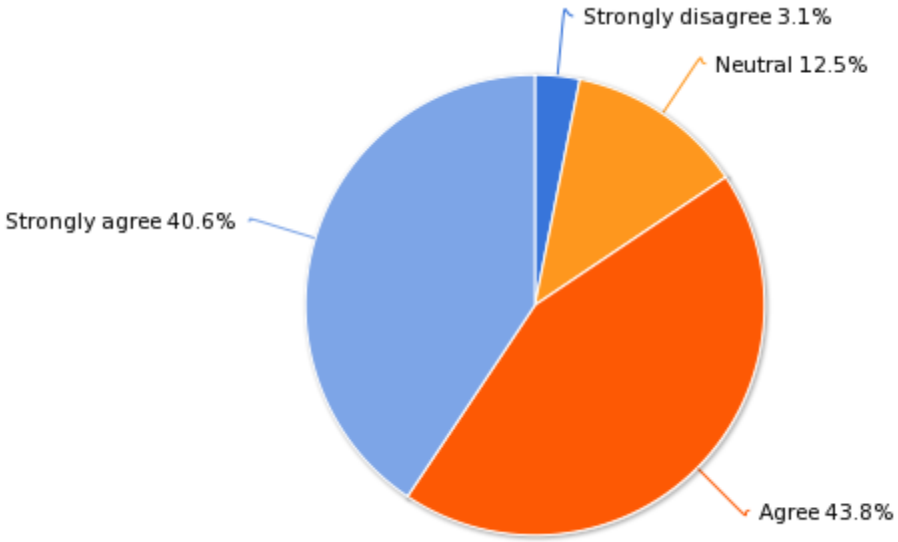


Figure 2.6 The Implementation of Communication Guidelines by Project Leaders.

CHAPTER 3

Conclusions, contributions, and implication

This chapter contains the overall conclusions, the study's practical implications and contributions to the literature.

The main purpose of this thesis was to explore the leadership of project managers in a virtual working environment, focusing on how the challenges specific to a virtual context affect virtual leadership, how trust is built within virtual teams and how leadership behaviour is manifested in a virtual setting. Next, we present the main conclusions of our study by answering each research question accordingly.

3.1 Conclusions

RQ1: How do the challenges specific to a virtual working setting affect virtual leadership perceived effectiveness and perceived project success?

In their definition of project success and effectiveness, project leaders referred to the importance of both end-measurables (time, budget, quality) and intra-measurables (ability to empower, to see change, and manage expectations). The challenges specific to the virtual environment such as communication through technology, cultural differences, managing conflicts, and building trust affect both the way end-measurables are achieved and the way the project intangibles or intra-measurables are handled. These challenges considered in our study were perceived by the project managers as the most critical to control in order to achieve project effectiveness. Therefore, our findings reveal the communication challenge as being time and energy-consuming, leading to delays for the project deliverables. Moreover, communicating through computer-mediated technology represents a great hindrance to creativity within virtual meetings, especially because of lack of coincidental meetings and additionally, demands for flexibility and availability for the project managers. Also, the use of technology with a low synchronicity and social presence such as the Email and fixed or mobile phones, and misalignment of technology within organizations render communication more difficult to achieve and affects trust building and effectiveness. Undermining communication technology trainings by the organizations in our study at the beginning of projects and along with the development of technology represents an essential drawback to effective communication and results delivery.

On the other continuum, team members perceived the difference in time-zone as the most challenging factor that posed difficulties in following up the completion of tasks. Also, as emphasized by the team members, working in projects increases the complexity of coordination of tasks, since some of the team members worked full time on other projects. We consider this aspect as an essential finding within our research to which leaders referred to as well, and that affects how they shape their behaviour and the extent to which they can influence certain variables when leading virtually.

Cultural differences on the other hand, affect how team members perceive the achievement of project goals and tasks, and therefore, ask for more explicitness, for great focus on managing expectations, and for being open-minded to build cultural knowledge mainly through experience. However, from team members' perspective, differences in background and experiences represent a challenge that project managers should take into consideration, to transform differences from being a source of irritation to being a strength for the team.

Furthermore, our findings show that conflicts, if task-related, have a beneficial impact on team dynamics, since they may be a way of surfacing team members' feelings, frustrations and the challenges related to them make team members become stronger and more united.

RQ2: How is trust accomplished in a virtual setting, given the temporary aspect of projects?

Having tested Greenberg et al.'s (2007) model of how project leaders build trust in different stages of a project team's life, the results show that project leaders start creating the foundation for trust in the inception stage of a team and reaches the apogee in the transition stage. Initially, trust was achieved through creating a unifying purpose to which everyone could adhere and through which members could rely upon each other to attain it. Moreover, as importantly emphasized was to create a culture based on respect towards everyone's skills and previous experience. This culture could be shaped through regular face-to-face meetings, team building activities, playing the role of the 'glue' among team members, by encouraging sharing of experiences, being open and bring the issues to the meetings and not the other way around. Other appropriate activities that fostered trust within project teams at later stages of the project life were to encourage supportive communication, celebration of interim deadlines, recognition of achievements during face-to-face meetings, being present when need for guidance and giving feedback as a result of different assessment tools, such as monthly meetings, interview controls, workshops, health check questionnaires and weekly status reviews.
However, the findings also revealed the drawbacks of Greenberg et al.'s (2007) model when applied to virtual project management. Some of the step actions managers were encouraged to follow did not take into account the temporary nature of projects, the length of some projects limiting project managers' influence on building trust at every stage of the team's life. Therefore, project managers did not focus on virtual team building activities and did not exchange information other than work with their team members when being physically dispersed, fact confirmed by the team members as well. Subsequently, our survey results exposed a lack of social bonds within the team as a result of the disparity between team members' trust towards each others' knowledge and expertise and the trust to rely on the other team members for help and support.
In addition, Greenberg et al.'s, (2007) model does not capture the nature of projects, the project leaders not being able, for instance, to participate in the selection process of the members or to influence their team members' behaviour through an adequate reward structure, since these did not fall into their area of responsibilities.

Additionally, one aspect not covered by theory but which we recognized as dominant in building trust was the effort leaders put into learning more about each individual's personality and background so to form a personal roadmap to understand how every member reacted, behaved and what kind of support he or she needed.

Nevertheless, the limitations in the project leaders' effort in building trust refer to lack of introducing previous achievements of team members to the others, lack of formal communication rules or guidelines to facilitate interactions, lack of personal or informal communication besides face-to-face meetings.

Finally, even though differentiating the team stages represents a good way of assessing how trust is achieved during the project life, the project leaders described the process more in terms of initial trust and the trust nurtured throughout the team's life. Describing trust-building for the entire project life was particularly daunting as project leader's actions and behaviour were determined by other contextual factors that did not necessarily conform to the team stages as described by Greenberg et al., (2007). Therefore, even though the questions were asked according to the framework, the answers were intertwined and approached differently. This leads to underlining the complexity of trust building and the importance of contextual and individual factors that play an important role in how trust was perceived and approached.

RQ3: How is leadership behaviour different in virtual projects compared to face-to-face projects?

Previous studies have claimed that task and relationship-oriented leadership behaviours become somewhat more important in a virtual working environment (Bell & Kozlowski, 2002; Zimmerman et al., 2008). Our research study confirms the greater importance of these behaviours in a virtual context and mention that task-related leadership behaviour is higher in the initial and final stages of a team's life, the relationship-oriented behaviour dominating along the other stages of a project development. Moreover, the contingency theory presented by Yoo and Alavi (2004) argues that the leader's behaviour depends on situational factors such as task and organizational conditions. However, our findings support the idea that leaders' behaviour in most instances depended on the people in the team, on their background and experiences rather than the nature of the task. Also, leaders' behaviour is influenced by the time the individual team member has dedicated to that certain project.

Furthermore, when analyzing team members' perspective, we found out that the team members less involved in virtual activities (40% or less) perceived their leader as being equally focusing on task and relations. Meanwhile, while the degree of virtuality of members' activities increases (60% and more), leaders were perceived as more task-oriented. However, the importance of people-oriented behaviour is outlined through the 78.1% of the respondents that mentioned the success of a project to be highly dependent on the project spirit such as trust, good communication and leader's ability to empower.

Concurrently, as part of the task and relations-related leadership behaviour, we identified that the key factors in leading virtually were the effective management of expectations, change management and motivation and empowerment. These factors were perceived by project leaders as equally important in a traditional face-to-face working environment, but because of communication difficulties, cultural and background differences of team members, and constant variance along the way of the projects, these become paramount and more relevant when leading virtually. Moreover, cultural differences rendered empowerment more difficult to achieve because often, some team members were afraid to step out of their role.

Finally, concerning sharing leadership within the team, for a better effectiveness in leading virtually, our findings affirm that shared leadership occurs in teams where members have good leadership skills and it does not apply to decision-making. In our case, team members did not have the same leadership roles as their project leaders, rather their roles represented an extension

of their daily tasks in order to stimulate the team processes and team performance. Additionally, shared leadership should be as a facilitator for a better recognition and resolution of problems.

3.2 Contributions

In this section we present our theoretical contributions to existing literature on virtual leadership.

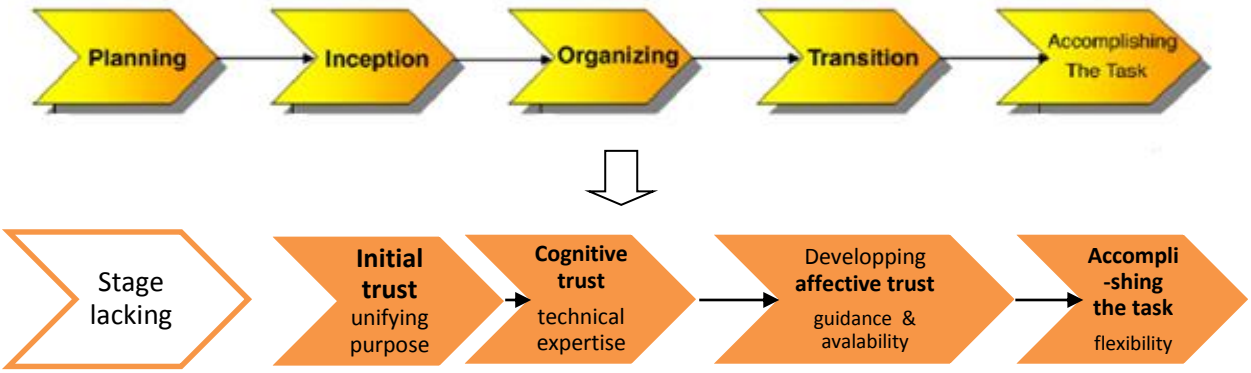
First, our findings extended current literature on e-leadership by taking a step forward from identifying the key challenges of leading virtually by actually exploring how these affect perceived project success and effectiveness. We identified that computer-mediated technology represents a great hindrance to creativity in virtual meetings and virtual projects in general, aspect not mentioned in the literature revised. Moreover, taking into account Figl and Saunders' (2011) description of the technology used in virtual settings, we identified that the technology used by project managers was low in synchronicity and social presence, in spite of the innovative nature of projects, a fact that comprises certain practical implications as well. Moreover, in our study we covered the gap of lack of multi-methods study for virtual project teams, having added team members' perspective. Hence, the challenge of cultural differences was seen by project leaders as a barrier in terms of how team members perceive the achievement of goals and tasks, whereas the team members' perspective focused on the differences in background and experience of the members as a challenge to be taken into account by project leaders. Also, we built on the current literature by showing that conflicts should be viewed as beneficial for teams' dynamics and should be treated as such when leading virtually.

Additionally, concerning task and relationship-oriented leadership behaviours, we extended prior research concerning their application to a virtual setting by applying them to project management and contributed to exploring how these behaviours are manifested across a team's project life. Therefore, our findings confirm that task and relationship oriented behaviours become more important in a virtual setting ((Bell and Kozlowski, 2002; Davis, 2004; Griffith & Meader, 2004; Zimmermann et al., 2008) and reveal that in the case of a virtual project, the task related behaviour is more important at the beginning and end of a project, whereas the relationship oriented behaviour more in the other stages of a project. Also, by including team members' perspective, we could outline that once the degree of virtuality in the participants' daily work increases, task-oriented leadership behaviour becomes more obvious, therefore supporting Zimmermann et al.'s (2008) findings. However, in the case of a low degree of virtuality in the participant's daily work, both relationship and task-oriented behaviours are perceived as important.

Moreover, building on prior literature that has viewed shared leadership in virtual teams especially as beneficial and highly relevant when tasks are complex, our findings support the idea that shared leadership is indeed beneficial for a better coordination of tasks within virtual teams, but that it is limited in terms of decision-making and is preferred in the teams where there are members distinguishing themselves through good leadership skills.

Finally, the main contribution in our study concerning trust building in a virtual context was to empirically test Greenberg et al.'s (2007) model of trust required in team stages and outline the main components of trust achievement as performed by the virtual project leaders in our

research. Therefore, illustratively, Greenberg et al.'s, (2007) model applied to our study can be represented as following:



3.3 Practical implications and recommendations

After discussing the conclusions and theoretical implications of our study, next we present some practical implications for project managers leading virtual projects.

First, we would like to outline the importance of being aware of the challenges to leading virtual projects effectively. Therefore, to overcome the barriers of communication through computer-mediated technology that hinder project managers' approach to leading, trainings and support on the use of different types of technology is essential for minimizing miscommunication and enhancing interaction and social presence of leaders and members. Moreover, organizations that generate virtual projects should develop an appropriate infrastructure that includes alignment of technology across members and organizations. Additionally, besides some cultural trainings mentioned by project leaders, in our research study we perceived a lack of trainings on how to lead virtually. Therefore, derived from our findings we believe that trainings on virtual leadership would be beneficial for mastering techniques for effective formal and *informal* communication, what (virtual) team building activities are more appropriate, how to enhance creativity during virtual meetings and how to make sure people are involved and participative.

Second, project managers should capitalize more on the differences between team members in terms of background and experience and transform them in strength by for instance, structuring subgroups in terms of personality or individual character. Also, project managers can contribute to project effectiveness by creating a culture where people are not afraid to speak up, provide group and *individual* feedback when necessary, be open minded and have empathy for people.

Third, for team cohesion and trust, we recommend project managers to implement formal communication rules and make sure everyone adheres to them, to put some effort into developing non-task related communication, increase their 'presence' through constant updates concerning the project path, be explicit and monitor change. Even though technology keeps developing every day, the importance of face-to-face meetings did not fade away. Having face-to-face meetings in the beginning of the virtual team's life cycle is of great importance in order to be able to know the team members, to get to know their motivations and build a first important impression of the team. Afterwards, project managers should organize regular and predictable

times of the face-to-face meetings as the best way to keep up the team spirit and monitor the project development.

Finally, if possible, the reward structure should be arranged in such a way as to foster cooperation and trust among team members, as for instance introducing incentives for overall team performance.

3.3.1 Additional recommendations for virtual project leaders

- Create a discipline within the team that people agree upon in order to prevent late drop in when there is a virtual meeting. Also this discipline may get the members more concentrated during the meetings so no multi-tasking is occurring behind the screens.
- Team members acknowledged a lack of creativity during virtual meetings. Try to be more innovative when it comes to these meetings, thinking of ways to involve members and get them interested.
- Do not rely so much on old communication tools such as Emails and phones to communicate with the team members. These hinder developing relationships, communication and trust. Rely on them more when there are language barriers, since in this case written communication dissipates confusions in terms of tasks.
- Develop an appropriate infrastructure that includes alignment of technology across members and organizations.
- Organize trainings on how to lead virtually, cultural trainings and technology usage trainings, to minimize miscommunication and enhance interaction and social presence of leaders and members.
- Try to make use of smaller groups when there is a presentation or a meeting so everyone can participate in the conversation and give their point of view.
- A good way to enhance informal virtual communication is to allow social communication at the beginning of the virtual meetings.
- When non-task or informal communication is not possible, increase at least formal communication, since according to the theory, frequent task related communication also leads to trust building in virtual teams.
- Try to get to know each member individually to be able to give personal and effective feedback.
- Create an understanding of the language used within the virtual team and also collect experience from the cultures involved to avoid misunderstandings etc.
- Create formal communication guidelines for team members.
- Share the pressure within the team so it does not become stressful for one single individual only.
- Organize recurrent meetings, coaching and mentoring sessions to monitor individual progress and quality of work and to guide members along the development of the project.
- Try to implement as many leadership and authority levels as possible because it is easy to solve problems but also to recognize problems when there is the light level of escalation.
- Work with delegation and not obligation within the team.
- If there is the possibility, try to build up relationships before the project starts in order to achieve initial trust.

- Control the three critical factors of: managing of expectations, motivation and empowerment, and change management (acknowledge, manage and implement change) in order to achieve perceived project success.
- Balance between gratitude and generosity. Recognize people for what they do. Prepare to sacrifice personal time and be available. Never expect people to do something which you are not prepared to do.

To conclude our study, virtual leadership has become a current trend and future preoccupation for organizations worldwide. The growing technological sophistication and organizations' orientation towards new ways of creating value and competitive advantage trough global virtual projects have revealed the need for leaders capable of managing complexity, diversity, uncertainty and change characteristic to virtual projects. The journey to become an effective virtual leader whose behaviour can transcend these challenges requires deep levels of understanding and incessant development of skills and methods to be able to bridge geographical, cultural, and functional frontiers. This is because virtual leadership is here to stay.
Hopefully this thesis has provided useful insights into virtual leadership and trust building for project success.

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Appendix 1. Interview Questions

Overarching Themes	Questions	Possible probes (follow-up questions)
General working characteristics of the interviewee	Could you do a brief presentation of yourself? Which company are you currently working for?	
	During your professional career, have you managed only virtual projects, only traditional projects or both traditional and virtual projects?	How many years have you been working with projects? How many in virtual projects?
	Are you currently supervising/leading any virtual projects?	Where do you usually work (office, home)? Do you ever combine office with telecommute?
Characteristics of the team	Are the members of the teams international or are they geographically dispersed within your national borders? (Figure 2.1) Are the teams created with employees from different organizations? (Figure 2.1)	Do you have the same team for more than one project?
	How are the teams created and members selected?	What are the main criteria on which you base your decision?
View on virtual teams	What would you say is the biggest difference between leading / working in virtual teams compared to co-located teams (in the same place)?	Do you enjoy working in a virtual environment?
	What are the pros and cons of working with virtual teams? Do you face some specific challenges/ critical factors when working with virtual projects? What are they? How did you handle them?	
Project success	How do you measure the success of a project? What are the key factors for project success?	Tell us about a project in which the team subsequently considered it a successful experience.
	What are the main barriers specific to the virtual environment that affect project success?	Tell us then about a project that has been experienced as unsuccessful.
	Do you consider project „intangibles" (leader's behaviour, vision, values, emotions, trust etc.) as important as time, budget and quality? Why/why not?	

Task-oriented leadership behaviour	Do you pressure team members in order to obtain productive results? How do you monitor individual progress and quality of work? Do you share leadership within the team? Why/why not?	Is the result more important than how people feel? Is everyone aware of everyone else's progress?
	What available technologies do you use in order to communicate within the team? Which one do you consider to be the most effective? Is there anything missing in your current software that you would like to see implemented?	Do you have favourite software for project management? Does it help to solve the disadvantages of VPM? In which way?
	Are members clear about their roles and responsibilities within the team?	
Relationship-oriented leadership behaviour	How do you communicate your expectations to the team members? How do you provide feedback, coaching and support to the team members? How much autonomy/freedom do team members have in the process of decision-making? What conflict situations where you confronted with during the project time? How did you solve them? How did it affect the project outcomes?	
	How did you handle the time zone and cultural differences, if any? Were there any situations that affected the way you worked? How do you manage to commit all team members?	Did you have to adjust to other cultures? Do you actively build your knowledge of other cultures?
	Stage 1: What do you consider when assembling/establishing the virtual team?	If the members do not have certain characteristics or skills to work in a virtual setting, do you

Trust-building	*Stage 2*: When the team is already put together, (1) do you formally introduce the members and their main achievements to the others, (2) do you organize team-building activities, (3) do you create any rules of engagement within the team? If yes, could you please describe the processes?	provide any training? What is the organisation's reward structure (competitive/cooperative rewards)?
	Stage 3: How do you acknowledge team members' contributions? Do you think participation of the team members in organizing the project activities is a good idea? Do you monitor how communication is flowing among team members?	
	Stage 4: How do you ensure that members are informed and clear about everything concerning the accomplishment of tasks?	Do you usually look at the team as a whole or as formed of individual members with clear roles?
	Stage 5: Were there any significant delays in accomplishing the task? Do you celebrate the achievement of interim deadlines? Why/why not? On each of the stages above, do you put more emphasis on goal achievement, setting tasks, achieving outcomes and deliverables, or do you focus more on communication, organization of interactions among members, emphasizing shared values and norms? Have you established any specific communication guidelines or other rules to enhance communication and exchange of information, ideas?	
	What challenges have you encountered in the process of trust building?	How frequently do you communicate with the team members?

Appendix 2. Questionnaire - Virtual Team Members

Dear Virtual Team Member,
The following questionnaire has been developed to explore leadership and trust-building in virtual teams.
You have been chosen to participate in this survey because you are or have been a member of a virtual project team and have valuable knowledge that is important for our study.
The survey should only take approximately 10 minutes of your time and the answers will remain anonymous after your participation.
When completing the survey it is important that you answer all the questions. The result of your answers will be of value to both virtual project teams and leaders in the future.
We really appreciate your assistance in this survey!

To be filled in by the team leader:

1a. Please specify the virtual project you are referring to when filling in this questionnaire:	_____
2a. What was the project duration?	_____
3a. The size of the virtual project team was Please note that *virtual teams* are geographically and/or communication and information technologies in order to accomplish a specific goal organizationally dispersed and collaborate via	3a. Fewer than five people 3b. Between five and ten people 3c. Between 10 and 20 people 3d. Between 20 and 30 people 3e. More than 30 people 3f. The size of the team varied considerably
4a. The team members were from	4a. 1 country 4b. 2-4 different countries 4c. 5-6 different countries 4d. 7-8 different countries 4e. 9 or more different countries
5a. How often did your virtual team meet in person?	5a. Never 5b. Once during the project 5c. Twice during the project 5d. Three times during the project 5e. More than 3 times during the project
6a. Which of the following tools did you use to communicate and	6a. Email 6b. Fixed phone

collaborate with your virtual team? (Select all that apply).	6c. Mobile phone or other mobile device 6d. Video conferencing 6e. Web conferencing/Virtual meeting space (eg,WebEx) 6f. Shared calendar/project plans 6g. Instant messaging (eg, MSN Messenger) 6h. Voice over IP tools (eg, Skype) 6i. Online discussion forum 6j. Web-based real-time messaging tools (eg, Campfire) 6k. Bespoke systems 6l. Wiki 6m.Social network site (eg, Facebook) 6n. Online office suite (eg, Google Docs) 6o. Blog 6p. Governance tools (eg, MetaTeam) 6q. Other (Please specify):_____

To be filled in by the team members:

1. Please select the virtual project you were part of (the project leader is indicated in parentheses):	1a. (Sean Watts) FBW 1b. (Maria Forss) DuoCort Pharma 1c. (Ullrika Allgén) Dapagliflozin Clinical Project Team 1d. (Mattias Holgersson) Metis 1e. (Erik Woerdeman) Sapphire 1f. (Rickard Westerberg) Aurora Latin America Project 1g. (Antonio Vizzino) Projects running in Innovation Board SKF
2. My main functional role within the team was (Please choose maximum 3):	2a. Strategy and business development 2b. Finance 2c. General management 2d.Marketing and sales 2e. Project management 2f. IT 2g. Risk 2h. Customer service 2i. Operations and production 2j. R&D 2k. Human resources 2l. Information and research 2m.Legal 2n. Supply-chain management 2o. Procurement 2p. Other (please specify):_____
3. Which of the following best represents the amount of time you spent working within the virtual team?	3a. That was the only way I worked 3b. At least 80% of my time

	3c. About 60-80% of my time 3d. About 40-60% of my time 3e. About 20-40% of my time 3f. About 10-20% of my time 3g. 10% or less of my time
4. The most challenging factors in working within the virtual team were (Please select all that apply)	4a. Computer-mediated communication 4b. Cultural differences 4c. Time zone 4d. Language 4e. Coordination of tasks 4f. Trust-building 4e. Other (Please specify):_____
5. Which of the following tools do you think were the most efficient to communicate and collaborate with your virtual team? (Please select all that apply).	5a. Email 5b. Fixed phone 5c. Mobile phone or other mobile device 5d. Web conferencing/Virtual meeting space (eg,WebEx) 5e. Video conferencing 5f. Shared calendar/project plans 5g. Instant messaging (eg, MSN Messenger) 5h. Voice over IP tools (eg, Skype) 5i. Online discussion forum 5j. Web-based real-time messaging tools (eg, Campfire) 5k. Bespoke systems 5l. Wiki 5m.Social network site (eg, Facebook) 5n. Online office suite (eg, Google Docs) 5o. Blog 5p. Governance tools (eg, MetaTeam) 5q. Other (Please specify):_____
6. I would describe the team leader as (for that specific virtual project) (Please select maximum three options):	6a. Focusing on accomplishing the task 6b. Focusing on people, on creating relations among team members 6c. Motivating and empowering 6d. Giving little guidance and support 6e. Communicating in a distant manner 6f. Other (please specify):_____
7. The most important factors that contribute to project success in virtual teams in my opinion are (Please select maximum three):	7a. Correct selection and integration of information technology tools for communication 7b. Clear objectives, roles and responsibility 7c. Stakeholder and customer satisfaction

	7d. Leader's building activities (focusing member's emotions, attitudes, and norms on expected outcomes). 7e. Cultural understanding and adjustment 7f. Project spirit (trust, good communication, leader's ability to empower, motivate).

To what extent do you agree with the following statements?

8. I trusted the other members' knowledge and expertise	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
9. I had a clear role and clear tasks assigned within the team	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
10. My team leader replied promptly to any of my inquiries or questions	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
11. My team leader provided us with accurate and unbiased feedback regarding individual and team performance	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
12. My team leader implemented communication guidelines within the team	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
13. My team leader acknowledged my achievements individually and to the other team members	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
14. I felt I knew the other virtual team members well	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
15. I felt that I could count on the other team members for help or support	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
16. My team often exchanged information about topics other than work (eg, personal interests)	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
17. My team experienced misunderstandings or conflicts during the project	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
18. I think the project manager's way of leading was suitable and efficient for the virtual setting	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5

Appendix 3. Answers Questionnaire-Likert scale

Question	Distribution	Mean	Standard Deviation
8. I trusted the other members' knowledge and expertise:	Strongly disagree: 0.0% Disagree: 0.0% Neutral: 3.1% Agree: 25.0% Strongly agree: 71.9% Not applicable: 0.0%		
9. I had a clear role and clear tasks assigned within the team:	Strongly disagree: 0.0% Disagree: 6.3% Neutral: 6.3% Agree: 25.0% Strongly agree: 62.5% Not applicable: 0.0%	4.4	0.9
10. My team leader replied promptly to any of my inquiries or questions:	Strongly disagree: 0.0% Disagree: 6.3% Neutral: 3.1% Agree: 25.0% Strongly agree: 65.6% Not applicable: 0.0%	4.5	0.8
11. My team leader provided us with accurate and unbiased feedback regarding individual and team performance:	Strongly disagree: 0.0% Disagree: 3.1% Neutral: 12.5% Agree: 37.5% Strongly agree: 46.9% Not applicable: 0.0%		
12. My team leader implemented communication guidelines within the team:	Strongly disagree: 3.1% Disagree: 0.0% Neutral: 12.5% Agree: 43.8% Strongly agree: 40.6% Not applicable: 0.0%	4.2	0.9
13. My team leader acknowledged my achievements individually and to the other team members:	Strongly disagree: 0.0% Disagree: 6.3% Neutral: 6.3% Agree: 28.1% Strongly agree: 59.4% Not applicable: 0.0%	4.4	0.9
14. I felt I knew the other virtual team members well:	Strongly disagree: 0.0% Disagree: 3.1% Neutral: 21.9% Agree: 40.6% Strongly agree: 34.4% Not applicable: 0.0%	4.1	0.8
15. I felt that I could count on the other team members for help or support:	Strongly disagree: 3.1% Disagree: 9.4% Neutral: 6.3% Agree: 28.1% Strongly agree: 53.1% Not applicable: 0.0%		
16. My team often exchanged information	Strongly disagree: 3.1% Disagree: 9.4%	3.3	0.9

about topics other than work (eg, personal interests):	Neutral: 43.8% Agree: 25.0% Strongly agree: 9.4% Not applicable: 9.4%		
17. My team experienced misunderstandings or conflicts during the project:	Strongly disagree: 6.3% Disagree: 21.9% Neutral: 15.6% Agree: 40.6% Strongly agree: 15.6% Not applicable: 0.0%	3.4	1.2
18. I think the project manager's way of leading was suitable and efficient for the virtual setting:	Strongly disagree: 3.1% Disagree: 3.1% Neutral: 3.1% Agree: 31.3% Strongly agree: 59.4% Not applicable: 0.0%		