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**THE RELATIONSHIP BETWEEN A VIRTUAL LEADER'S
COMMUNICATION PRACTICES AND A VIRTUAL TEAM'S
PERFORMANCE**

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ABSTRACT

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A lot of research has been carried out into virtual teams and virtual leadership, yet there is hardly any research available on the communication behaviour of virtual leaders within a real business context. This research assessed the communication practices of virtual leaders and analysed the relationship between these practices and the performance of virtual teams. The objective of this research was to examine the distinctions of virtual teams, to study the leader's role in a virtual team and its performance, and to examine the leader's communication practices within virtual teams.

The research involves a case study in which interviews have been carried out within an international technology company headquartered in Finland. Qualitative research methods were applied in the research.

Based on the results of the study it can be said that there is a strong relationship between a virtual leader's communication practices and a virtual team member's job satisfaction. Through their communication practices, activities and message contents, leaders can affect the job satisfaction of virtual team members. In virtual leadership the focus is not in virtual but in leadership. It does not matter if the context is virtual or face-to-face; similar communication practices are good in both cases.

As the global economic crisis strongly affected the sales results of the teams during the research, direct conclusions on the relationship between

a leader's communication practices and a virtual team's objective performance cannot be made.

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Virtuaalitiimejä ja niiden johtamista on tutkittu paljon, mutta toistaiseksi tutkimus virtuaalitiimien johtajien viestinnästä todellisessa liiketoimintaympäristössä on ollut vähäistä. Tässä tutkimuksessa selvitettiin minkälaisia viestintäkäytäntöjä virtuaalitiimien johtajilla on, ja mikä on käytäntöjen ja tiimin tuloksellisuuden välinen suhde. Tutkimuksen tavoitteena oli selvittää virtuaalitiimin erityispiirteitä, johtajan roolia virtuaalitiimissä sekä johtajan viestintäkäytäntöjä.

Tutkimus on tapaustutkimus, jonka empiirinen osa suoritettiin haastatteluina suomalaisessa, kansainvälisesti toimivassa teknologia-yrityksessä. Tutkimuksessa käytettiin laadullisia tutkimusmenetelmiä.

Tutkimuksen tulosten perusteella voidaan sanoa, että virtuaalitiimin johtajan viestintäkäytäntöjen ja tiimin jäsenten työtyytyväisyyden välillä on voimakas suhde. Johtaja voi viestintätavoillaan, -aktiivisuudellaan ja viestien sisällöillä vaikuttaa tiimin jäsenen työtyytyväisyyteen. Virtuaalisessa johtamisessa pääpaino ei ole virtuaalisuudessa vaan johtamisessa. Samanlaiset johtamisviestinnän käytännöt ovat hyvät olipa konteksti virtuaalinen tai kasvokkainen.

Koska globaali taloudellinen kriisi vaikutti voimakkaasti tutkittujen tiimien myyntituloksiin tutkimuksen aikana, ei voida vetää suoria johtopäätöksiä

siitä, mikä on virtuaalitiimin johtajan viestintäkäytäntöjen ja tiimin
objektiivisten tavoitteiden välinen suhde.

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This has felt like a never-ending journey, but I have finally finished it! For me completing a Master's Thesis alongside family and full-time work commitments has involved much more than reading and writing a hundred pages of text. More importantly, it has meant continuous learning, time management and interesting discussions with my colleagues, supervisors and husband. Now it is time to thank the people who have helped me with my work.

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1 INTRODUCTION

This study examines the relationship between a virtual leader's communication practices and a virtual team's performance. The research involves a case study in which interviews have been carried out within an international technology company headquartered in Finland.

1.1 Background of the study

Globalisation decentralises organisations geographically (Kerber & Buono, 2004, 4). At the same time rapid technological development has enabled virtual co-operation: work can now be conducted anytime and anywhere (Cascio & Shurygailo, 2003, 362). Townsend, DeMarie & Henrickson (1998, 18) define primarily five factors why organisations are moving from face-to-face teams to virtual teams. Firstly, the direction is towards flat or horizontal organisational structures. Secondly, environments that require global, inter-organisational co-operation are emerging all the time. Thirdly, workers expectations regarding organisational participation are changing. Fourthly, production is shifting to service and knowledge work environments. Fifthly, the globalisation of trade and corporate activities has increased considerably (Townsend et al., 1998, 18).

According to Bell and Kozlowski (2002, 15) virtual teams offer high flexibility for organisations. Virtual teams allow organisations to hire the best people who are spread around the world and may be unable or unwilling to relocate. Virtual teams also facilitate corporate-wide initiatives within international organisations and improve customer service and access to global markets (Cascio, 2000, 81-82; Humala, 2007, 14; Kerber & Buono, 2004, 4).

Stevenson and McGrath (2004, 127) state that evidently the culture of virtual teams is increasingly being adopted by major international

companies, of which many are reporting substantial productivity increases and low costs as a result. More and more superiors and managers find themselves leading teams whose members are spread around the world (Kerber & Buono, 2004, 4).

A lot of research has been carried out into leadership. In literature leadership has been viewed from many perspectives, including personality traits, different styles, types of power or influence and constitutional contingencies. However, according to Zigurs (2003, 342) virtual leadership is not that well known an area as most studies have been carried out with ad hoc student groups instead of with real working teams. It would have been interesting to study virtual leadership in the field, but I felt it challenging to categorise the leaders of the case company into specific leadership types or styles. After having read various leadership theories and empirical studies focusing especially on the leadership of virtual teams, I found out that a leader's communication is a fundamental part of virtual leadership (e.g. Connaughton & Daly, 2005, 187; Cascio 2000, 87) and therefore decided to focus on it.

This study closely relates to leadership, organisation, communication and social psychology research. The theoretical discussions of the study represent two different orientations: virtual teams and communication. Many earlier virtual team studies touch the communication, interaction and relationships of virtual teams (see e.g. Maznevski & Chudoba, 2000; Hart & McLeod, 2003; Kayworth & Leidner, 2001-2002; Potter & Balthazard, 2002; Suchan & Hayzak, 2001), yet there is hardly any research available on the communication behaviour of virtual leaders within a real business context. Most empirical studies covering the communication practices of virtual leaders concentrate on the media or technology choices of leaders (see e.g. Lengel & Daft, 1988; Sivunen & Valo, 2006; Suh, 1998) or have been carried out with ad hoc student groups in laboratory settings (see e.g. Hambley et al., 2006; Järvenpää et al., 1998; Järvenpää & Leidner, 1999, Kayworth & Leidner, 2001-2002). Studies have also been carried out into

corporate communications (see e.g. Young & Post, 1993; Pincus 1986), the communication practices of leaders (see e.g. Johlke & Duhan, 2000; Johlke & Duhan, 2001; Schnake et al., 1990), motivating language theory (see e.g. Mayfield et al., 1998; Mayfield & Mayfield, 2002) and leader-member exchange (see e.g. Yrle et al., 2002; Yrle et al., 2003; Cogliser et al., 2009), yet there is a lack of studies concerning the communication practices of leaders in virtual environments in order to evaluate their impact.

According to Bell and Kozlowski (2002, 15) it is clear that virtual teams have and will have an important role in current and future organisations. Zigurs (2003, 339) and Connaughton and Daly (2005, 188) in turn state that understanding the nuances and processes of distanced leadership is highly important to both practitioners and organisational and communication research. The aim of this study is to fill the gap in virtual leadership and communication research for its part, to help understand what is considered to be “good” managerial communication by leaders and team members, and to provide virtual team leaders with guidelines concerning advisable communication practices.

1.2 The objectives and research questions of the study

The main objective of this study is to assess the communication practices of virtual leaders and to analyse the relationship between these practices and the performance of virtual teams. A deep understanding of communication behaviour requires studying practices empirically in the business environment. The objective of the theoretical part is firstly to examine the distinctions of virtual teams, secondly to study the role of leaders in virtual teams and their performance, and thirdly to examine the communication practices of leaders in virtual teams. The research framework is constructed from the theoretical framework.

Research questions guide the research work. The main question is like a scheme for the research (Hirsjärvi et al, 2004, 117). The main research question of this study is: What is the relationship between a leader's communication practices and a virtual team's performance? The three sub-questions that specify the main question and assist in building a comprehensive conception of the subject are:

- What are the distinctions of a virtual team?
- What is the leader's role in a virtual team and its performance?
- What kind of communication practices do virtual leaders have?

Research question:		
What is the relationship between a leader's communication practices and a virtual team's performance?		
1st sub-question: What are the distinctions of a virtual team?	2nd sub-question: What is the leader's role in a virtual team and its performance?	3rd sub-question: What kind of communication practices do virtual leaders have?

Table 1. The research questions of the study.

The research involves a case study in which the empirical data was collected by means of in-depth interviews. The analysis was conducted by using qualitative research methodology. Qualitative research methods were applied in this study to obtain an in-depth look at the communication practices of virtual leaders within a real business organisation. The structure of the in-depth interviews was principally formed based on the theoretical framework, although some space was given to potential new issues arising from the interviews. The analysis was conducted primarily against the theoretical framework.

The structure of the study follows the linear-analytic structure described by Yin (2009, 176). The study starts with an outline of the problem formulation and research questions. It then reviews the literature in Chapter 2, where

the previous theories are described. In Chapter 3 the research methods and data are presented. Chapter 4 contains analysis and findings, whereas Chapter 5 discusses the results, answers the research questions and concludes the research with theoretical and managerial contributions, limitations and ideas for future research. The following figure represents the structure of the study (Figure 1).

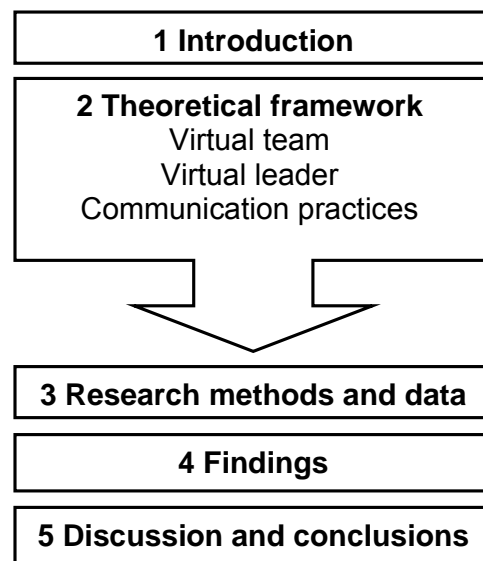


Figure 1: The structure of the study

1.3 Scope and limitations

This study focuses on the present state of the communications practices of virtual team leaders and not in the past or future states, even though communication practices and especially technology are continuously changing.

This study also does not analyse inter-organisational teams or communication practices, analysing instead communication on the intra-organisational team level. The team was chosen as the level of analysis as it forms a unit with a mutual leader, common goals and power of decision for its own business. A team is an established unit of an organisation in

current business environments, and work teams are becoming more and more virtual (Cascio & Shurygailo, 2003, 362). The individual was chosen to be the other level of analysis as a leader's communication behaviour is critical to the team's success, and communication between a leader and team member is mainly bilateral (Pincus 1986, 395; Mayfield et al., 1998, 235).

This study concerns the communication practices between a virtual leader and team members, not the interaction or relationships between team members.

2 THEORETICAL FRAMEWORK

The context of the study consists of the virtual team, the virtual leader and the virtual leader's communication practices. Two parts of the context, the virtual leader and virtual team, form the frames of the study and act as a frame of the research subject, whilst the third part, the leader's communication practices, is the phenomenon whose nature and relation to the team's performance is the aim of the study in this context. The context of the study is described below in Figure 2.

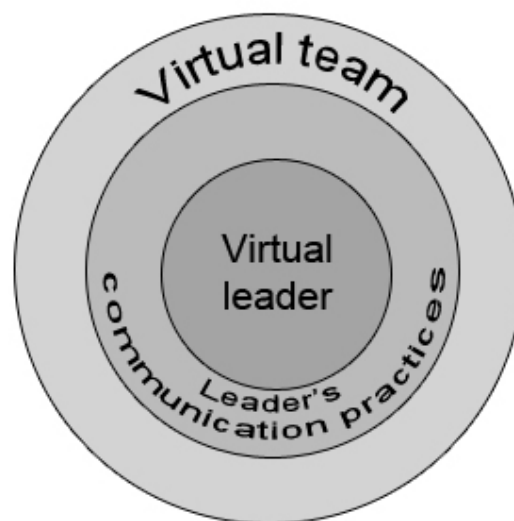


Figure 2. The context of the study

2.1 Virtual team

To be qualified as a team, a group of people must interact. According to Zigurs (2003, 340) they need to have common goals that they value. They also need to adapt to circumstances in order to achieve their goals (Cascio & Shurygailo, 2003, 362).

Cascio and Shurygailo (2003, 362) state that the major difference between traditional teams interacting physically and virtual teams is the separation by time and location. Unlike traditional co-located teams, virtual teams are groups of co-workers who work across time, space, geographical and organisational boundaries and who communicate with each other mainly by communications technology (Lipnack & Stamps, 1999, 17; Townsend et al., 1998, 18; Maznevski & Chudoba, 2000, 473). They rarely meet each other face-to-face as they work and live in different locations (Maznevski & Chudoba, 2000, 473). According to DeRosa et al. (2004, 224) virtual team members typically work more independently and autonomously than in traditional teams.

The literature employs at least three different terms with almost the same meaning: virtual team, geographically dispersed team and distributed team. They all have their own connotations. A virtual team is regarded as a team that does not physically meet at all but interacts solely through communications technology (Cascio & Shurygailo, 2003, 362). A virtual team can be formed for one project at a time and have shared leadership (Cascio & Shurygailo, 2003, 365; Zigurs, 2003, 342-343). The terms dispersed team and distributed team relate more to distance and geographic dispersion than to other aspects of virtual teams (Connaughton & Daly, 2005, 89).

The reason why I have chosen for this study the term virtual team instead of dispersed team is that the word virtual is more commonly used in the English literature in this context. Even though the word virtual may suggest

something “unreal”, in this study it does not represent anything unreal. In this study virtual team refers to a permanent team, not a temporary project team. It occasionally meets face-to-face, and is led by an assigned leader.

2.1.1 The major dimensions of virtual teams

It is not unambiguous to define a virtual team as its dimensions can be challenging in different ways in different teams. One team can find time differences to be a major challenge whereas another may feel that locating in different cities is the most challenging dimension. In this study I have chosen geographical, temporal, cultural and organisational dispersions as the main dimensions of a virtual team. These dimensions pose challenges for a leader’s communication with team members, yet at the same time they foster creativity and innovativeness (Zigurs, 2003, 340; Vartiainen et. al, 2004, 46). The major dimensions of virtual teams in this study are based on Zigurs’s (2003, 340) model and are illustrated below in Figure 3.

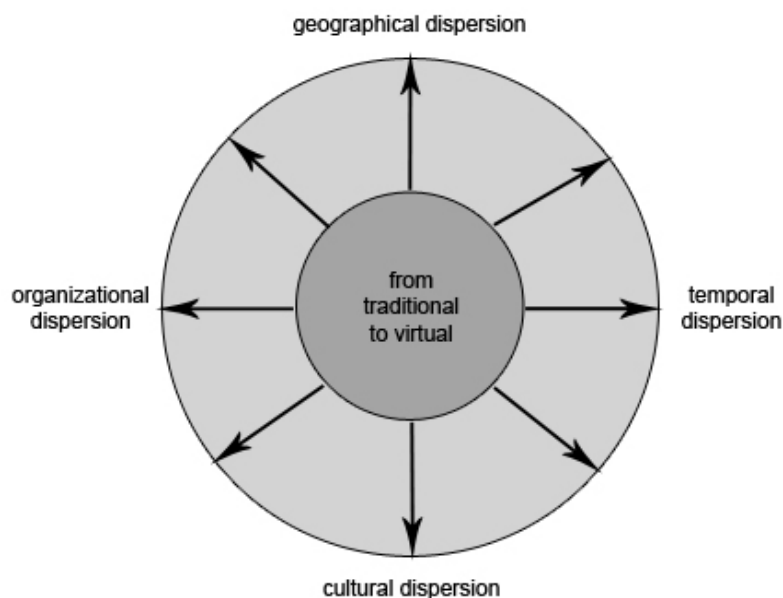


Figure 3. Dimensions of virtual teams (Zigurs, 2003, 340)

Geographical dispersion

Geographical dispersion means that team members are located in different cities or countries, even on different continents, and they represent local environments.

Temporal dispersion

Temporal dispersion means that team members live and work in different time zones. As the teams researched are affected by time differences of up to thirteen hours, it has been found out that time zone dispersion is a significant factor – even more significant than geographical dispersion. It is difficult to work if one is sleepy, or if an answer is needed right away and team members are sleeping at the other end. Temporal dispersion narrows the possibilities for synchronous team interaction. It typically lengthens the workdays of team members as local meetings are during office hours and global meetings outside normal working time (Klein & Kleinhanns, 2003, 387).

Cultural dispersion

Cultural dispersion means that team members speak different native languages and represent different nationalities and religions.

According to Robbins and Judge (2009, 404) English is mainly used in global business environments as the common language between people having different mother tongues. Still individuals modify the language individually, which increases the complexity of communication. Senders tend to assume that the terms and words they use mean the same to receivers as they do to them, but this assumption is often incorrect (Robbins & Judge, 2009, 404).

Sensitiveness in choosing words is needed to avoid offending others. Plenty of words may not be politically correct in all areas and nations, which may lead to using words that leave the message unclear, or the real meaning is lost (Robbins & Judge, 2009, 404-405).

Cultural differences have to be taken into consideration in daily communication. A better understanding of cultural dispersion and possible barriers can be achieved through the concepts of high- and low-context cultures. Hall & Hall (1990, 4) have studied cultural communication, and found it more complex and deeper than written and spoken messages. Context means the information that surrounds a communication event. Cultures differ from each other in how the message context influences the spoken or written message. For example, in places like Japan and the Arab and Mediterranean countries, which are high-context cultures, people heavily rely on nonverbal and subtle situational cues. What is said may be less important than what is not said. Most of the message is already in the person, whilst only a little is in the explicit, coded, transmitted part of the message. By contrast, people in North America, Germany and Switzerland, for example, represent low-context cultures and rely on spoken or written words to convey meaning. Body language and formal titles have only secondary meaning (Hall & Hall, 1990, 6–7). Figure 4 below lists some high- versus low-context cultures.



Figure 4. High- versus low-context cultures (Hall & Hall, 1990, 6–7)

Organisational dispersion

Organisational dispersion means that virtual team members can work in different functions of the organisation and possess various professional and organisational backgrounds. Team members may have different conceptions of good leadership and communication. Training may be required to understand the differences. In addition, rules that have been agreed together with team members diminish misunderstandings and increase common understanding of various issues (Vartiainen et al., 2004, 97).

2.1.2 Team performance

A leader's communication can be considered good or successful when the team is working effectively and its members are feeling well. Pincus (1986, 395) has found out that a leader's communication was strongly related to both job satisfaction and performance. Mayfield et al. (1998, 235) state that a leader's oral communication skills have great importance for successful outcomes.

Job performance is a commonly used term whose definition is dependent on the situation. In the literature it has been measured in several different ways (Mehra et al., 2006, 238). Team effectiveness has three underlying dimensions: team performance, behavioural outcomes and attitudinal outcomes (De Jong et al., 2008, 366). De Jong et al. (2008, 367) state also that team performance is often measured by assessing the perceived performance or the satisfaction of team members. In this research I try to provide rationale for how a leader's communication practices are related to both objective and attitudinal measures of team performance.

Kirkman et al. (2002, 75) state that objective performance is defined case by case and can mean, for example, growth, profitability, process improvement, customer satisfaction or successfully finished projects. In this

research the two main targets of each team are used as an objective measure of the team. One of these objectives is the annual sales/order intake in every team. The other objective is team specific, i.e. specifically defined for the team.

According to Pincus (1986, 396) job satisfaction has been operationalised in many different ways in earlier research. In communication research it is mostly defined in multidimensional terms as consisting of five distinct facets of job satisfaction: work itself, supervision, promotion, pay and fellow workers (Pincus, 1986, 396). Churchill et al. (1974, 255) have studied the job satisfaction of industrial salesmen and identified through interviews eight components of job satisfaction specific for salespeople. The determinants are the job itself, co-workers, supervision, sales training and home office support, pay and benefits, management and company, promotion and advancement, and customers (Churchill et al., 1974, 255). In this study three of the most commonly used dimensions of job satisfaction are measured: the work itself, leadership and company management.

2.2 Virtual leader

Avolio and Kahai (2003, 325-331) describe leadership as a dynamic organisational system, which means engaging individuals and directing them towards a particular goal or outcome. According to Avolio et al. (2001, 67) it is a social influence process to create a change in feelings, attitudes and actions of individuals and groups in the organisation.

Virtual leadership, which can also be termed e-leadership, is leadership of distant subordinates mediated by information technology. It is the communication, collection and dissemination of information that is required to support the organisation's work (Avolio & Kahai, 2003, 326). It can take place at any hierarchical level within the organisation and involve one-to-one and one-to-many interactions (Avolio et al., 2001, 617).

Humala (2007, 15) states that the biggest difference between a virtual leader and traditional leader is that virtual leadership takes place in an environment where colleagues rarely or never meet each other and where work is mediated by information technology. According to Humala (2007, 20) leading in a computer network is not about combining technologies but leading people. It is important to consider how virtual work affects the whole team and how everyone is supported to work towards mutual goals (Humala, 2007, 20).

According to Bell and Kozlowski (2002, 15) virtual teams create numerous challenges for leadership. Connaughton and Daly (2005, 188) highlight challenges such as building trust, inspiring, managing conflict, preventing feelings of disconnectedness, evaluating performance, communicating vision, establishing loyalty and maintaining team work. The leader's role in traditional teams is important but it is even more important in virtual teams (Cascio, 2000, 82, 87; Kerber & Buono, 2004, 7). Therefore virtual leading may require new ways to motivate people, communicate vision and create a common culture (Humala, 2007, 21).

Virtual leadership can be associated with one individual, or it can be shared between team members so that the role rotates from one member to another at different points of time (Avolio et al., 2001, 617; Zigurs, 2003, 342-343). In this study, however, the virtual leader is an individual who has been assigned to his team leadership role.

2.2.1 The role of the virtual leader in a virtual team

Various roles of virtual leaders have been identified in virtual leadership research. In Bell's and Kozlowski's (2002, 15) opinion the key role of a virtual leader can be divided into two primary categories: team development and performance management.

Cascio (2000, 87) states that virtual leader's biggest challenge is performance management. Performance management means defining, facilitating and encouraging performance (Cascio, 2000, 82, 87; Kerber & Buono, 2004, 7). It requires strong emphasis on co-ordination, creation of trust, direction showing and communication of clear individual roles and tasks (Järvenpää et al., 1998, 29; Hunsaker & Hunsaker, 2008, 91; Bell & Kozlowski, 2002, 26). In a virtual team a fundamental requirement is that team members understand their roles and responsibilities (Cascio, 2000, 88). According to Bell and Kozlowski (2002, 27) the leader's task is to motivate team members to commit to the overall team effort and towards mutual goals. In encouraging performance it is important to provide sufficient rewards that team members value (Cascio, 2000, 88). In Cascio's (2000, 88) opinion the leader's two major responsibilities in facilitating performance are eliminating roadblocks to successful performance and providing adequate resources to get the task done on schedule.

Team development means creating and supporting job satisfaction and relationships between team members (Avolio & Kahai, 2003, 326; Kerber & Buono, 2004, 9; Hunsaker & Hunsaker, 2008, 96). According to Klein and Kleinhanns (2003, 394) co-located teams share ideas, update each other on new developments, clarify misunderstandings and strengthen relationships in ad hoc hallway and cafeteria discussions. In virtual teams much of this kind of physical interaction is lost, and therefore a conscious effort has to be made to keep communication flowing between team members on a continuous basis (Klein & Kleinhanns, 2003, 394). In Kayworth's and Leidner's (2001-2002, 11) opinion a virtual leader should be able to create and maintain team cohesion, as it is extremely important for the group's effectiveness. Humala (2007, 27) states that virtual teams are rarely purely virtual, which means that they do occasionally meet, or part of the team is co-located. Perhaps the biggest challenge is to create a similar sense of presence and belonging for all team members, no matter where they are located.

Cascio (2000, 87) states that communication is a major challenge for virtual leaders, as they need to learn new communication skills to avoid feelings of isolation among team members. According to Zigurs (2003, 344) leaders of virtual teams need to learn how to use the interactivity and versatility of different channels to make their presence felt in a positive way among team members, as well as to support team performance and satisfaction. In Yoo's and Alavi's (2004, 28) opinion effective communication is crucial in virtual teams due to the absence of non-verbal cues, time delays in receiving feedback and the lack of a shared frame of reference.

2.3 Theoretical approaches on a leader's communication

There is no "grand theory" for this study, and the main purpose of the empirical part of the study is not to test any existing theory. The theoretical part of the study is a collection of ideas in flux. It can be understood as a collection of ideas that are subject to ongoing redefinition instead of stable and rigid formalisations that can be tested.

Communication has been studied by using various variables such as frequency, perceived adequacy of information, perceived equity of information sharing, work versus non-work focus and predictability of interaction (Connaughton & Daly, 2005, 201-202). Connaughton and Daly (2005, 204) note several communicative tactics that virtual leaders perceive to be effective. These are a) face-to-face communication at the beginning of a relationship, b) personal communication and small talk, c) over-communication with distant subordinates, d) care for cultural nuances and e) choosing the "correct" communication channel in each case and ensuring access to it. According to Cramton (2002, 356) effective communication requires "mutual knowledge". This is knowledge that parties share in common and know they share in common – a kind of mutual sense-making.

During the past few decades a rich and central area of research has been communication technology and a leader's choice of communication media (eg. Shrot et al., 1976; Daft & Lengel, 1984; Fulk et al., 1990; Sivunen & Valo, 2006; Vartiainen, et al., 2004); this too is part of the theoretical approach in this study.

In this study mutual knowledge, the roles of language and small talk are examined by means of the leader's motivating language theory (Sullivan, 1988) which is firmly based on widely accepted communication and leadership theories (Mayfield et al. 1998, 235). It has been studied in field settings by Sullivan in 1988, Mayfield et al. in 1998, Mayfield and Mayfield in 2002 and Sharbrough et al. in 2006, but only in co-located settings, not in virtual environments. Mayfield et al. (1998, 243) have stated though that motivating language has the potential to mediate virtual challenges.

2.3.1 Motivating language theory

Sullivan (1988, 112) has studied the motivating language of leaders in field settings and found out that motivating language together with congruent behaviour increases the commitment of subordinates. According to Mayfield et al. (1998, 235) the motivating language theory (Sullivan, 1988) is a rather simple theory of effective leadership language where the goal is to bridge the distance between a leader's intent and an employee's understanding in order to favourably affect employee performance and satisfaction.

In brief, the motivating language theory hypothesises that a strategic variance in a leader's messages can be used as a motivational tool to assist subordinates in meeting organisational and individual objectives. Three types of messages have been conceptualised (Sullivan, 1988, 104):

1. *Perlocutionary* language gives employees direction and reduces their uncertainty. It is used when a leader clarifies tasks, goals, roles and rewards to an employee.
2. *Illocutionary* language occurs when a leader shares his or her affect with a subordinate. It is an expression of humanity and used, for example, when a leader compliments an employee for a job well done.
3. *Locutionary* language makes meanings. It is used when a leader explains the organisation's cultural environment, its structure, rules and values to an employee. This is often done indirectly with metaphorical stories and rumours. It alerts an employee's sense-making to incorporate cultural norms (Sullivan, 1988, 108 - 110; Mayfield & Mayfield, 2002, 91).

In summary, cultural meaning-making combined with direction-giving and emphatic messages are the main components of the motivating language theory, and they form an integral whole. To be able to achieve the full benefit of motivating language, a leader must use a combination of the three main components. These represent most of the expressions that can occur in leader-subordinate discussions (Mayfield et al. 1998, 237).

A leader's behaviour strongly affects the influence of motivating language on the performance and satisfaction of subordinates. Consequently, the content of the message is always linked to the leader's other communication practices. Subordinates rely more on a leader's actions than message contents when the two are incongruent. It is the perceptions of subordinates that determine whether the leader's message is effective or not. An employee must understand the message before it can be considered to have achieved the motivating language theory's inferred goal of mutual sense-making (Mayfield et al. 1998, 237).

2.3.2 Theories explaining the communication channel choice

Several theories explain the choice of communication channels. The traditional way to theorise the choice of communication channels is to explain it either as a rational or social selection (Sivunen & Valo, 2006, 58).

A rational channel choice means that the technology that best suits the task is chosen. This perspective includes two approaches. One is called the *access/quality approach*, according to which the channel is chosen so that users can gain an acceptable quality of information exchange through the media that needs only little effort to access (Carlsson & Davis, 1998, 337).

The other perspective contains two well-known theories: the social presence theory and the media richness theory. Short et al. (1976, 157) have created the *social presence theory*, which stresses the importance of non-verbal communication. It sorts communication media according to their degree of social presence, or their capability to transmit information by expressions, gestures and vocal cues (Short et al., 1976, 65). Daft & Lengel (1984, 194-195) have proposed a theoretical model called the *media richness theory* to explain organisational success as the ability to process information with the appropriate richness so that it reduces uncertainty and clarifies ambiguity. Dennis & Kinney (1998, 257), in turn, have tested the media richness theory in the new media (i.e. computer-mediated and video communication) and suggest that simple routine messages require only a lean medium, while emotional and ambiguous messages need a richer medium. They categorise channels according to the availability of immediate feedback, personalisation, nonverbal backchanneling cues and language variety (Dennis & Kinney, 1998, 257-258).

Social channel choice is also called the social interaction theories approach where situational choice is based on the values and attitudes of

other people and the tools they use (Sivunen & Valo, 2006, 59). This perspective consists of two theories: symbolic interactionism and the social influence model. In the *symbolic interactionist perspective* (Trevino et al., 1990, 73) an organisation is viewed as a dynamic web of interaction and communication where members share assumptions and understandings about the meaning of words, events and actions. They create symbols that establish new organisational meanings (Trevino et al., 1990, 73). According to symbolic interactionism, media choice is an individual process but fundamentally socially constructed through shared symbols and meanings (Carlson & Davis, 1998, 340). It stresses the importance of organisational culture and practices. Fulk et al. (1990, 125) have developed traditional media-use theories further and created the *social influence model*. They suggest that media choice is, at its core, subjectively rational but that co-workers have an influence on it. The choice is subject to social influence, such as widespread norms and pressure for sense-making (Fulk et al., 1990, 125).

Besides the two major approaches, a third model explaining channel selection has been developed. The *adaptive structuration theory* created by Poole and DeSanctis (1990, 190) emphasises the importance of group interaction. According to this theory, channel choice is not individual but a joint decision, a product of the particular culture using the technology. The culture or organisation and the technology have an impact on each other and therefore the channel cannot be examined without studying the organisation (Poole & DeSanctis, 1990, 190; DeSanctis & Poole, 1994, 121).

Rather than testing any of the theories presented above or adopting them as a guideline for analysis in this research, the objective is to explore how these theories are linked with the communication of virtual leaders.

2.4 Communication practices of leaders

In this research the communication practices of leaders are defined so that they answer the questions what, through which channel and how? “What” refers to message content, meaning what is being communicated. The channel choice of leaders is researched in proportion to message contents, meaning what channel is chosen in each case and why. “How” refers to the leader’s communication style: his/her ability to listen and communicate interactively and proactively. This is connected to the leader’s awareness of his/her own communication.

2.4.1 Message content

As the motivating language theory (Sullivan, 1988) is firmly based on widely accepted communication and leadership theories, it is chosen for this study to explain the contents of leaders’ messages. The three types of conceptualised messages are measured in this study. They are enriched by Hart’s & McLeod’s (2003, 355) typology of communication events and categorized as described below in Table 2.

Meta-category	Subcategory
Direction giving	Clarification of tasks, goals and roles Information and advice sharing (what, why, how) Idea construction Direct instructions and requests Problem-solving (matters), conflict resolution (people)
Affective messages	Positive/constructive feedback Expressing/accepting feelings Personal compliments and issues Small talk and joking
Meaning making	Explaining the organization’s culture, environment, structure, rules and values, cultural norms

Table 2. Typology of message contents (Hart & McLeod, 2003, 355; Sullivan 1988, adopted)

2.4.2 Communication channels

A communication channel is the vehicle through which a message is transmitted. The complexity of tasks affects the amount of communication and versatility of different channels needed. For familiar routine tasks a unidirectional message is enough, whereas complex issues require more time and more diverse communication. The core of informal communication is in its spontaneity. Its content is richer than the content of formal communication. According to Vartiainen et al. (2004, 48) one of the major challenges in virtual communication is its weakness in supporting informal communication (Vartiainen et al., 2004, 47-48).

Figure 5 below illustrates the formal and informal dimensions of communication.

Formal	Informal
Scheduled beforehand	No schedule
Participation planned	Participants occasional
Agenda	No agenda
One-way	Interactive
Low information content	Rich information

Figure 5. Formal vs informal dimensions of communication
(Vartiainen et al., 2004, 47)

Vartiainen et al. (2004) have found out that in many organisations phone and electronic mail (email) are still the most commonly used tools in virtual teams (Vartiainen et al., 2004, 47). Sivunen and Valo (2006, 58) state that when different channels were evaluated by virtual team members in terms of work performance, it was found that the most useful tools are emails, scheduled and informal face-to-face meetings, one-on-one phone calls and even faxes. According to Vartiainen et al. (2004, 112) dyadic *one-to-one phone conversations* are highly usual, especially now that mobile phones

are so generally used. Because of the development of mobile technology, mobile phones are much more than just a channel for talking. The use of *email* has increased so much that it is considered even restrictive. This is the case especially if there are no rules for how to use email. Email is most suitable for short informative messages, questions or technical comments. The messages can be stored for further use (Vartiainen et al., 2004, 112).

Videoconferencing is often used to replace face-to-face meetings. As technical problems often disturb videoconferences, it is lower in richness than face-to-face meetings. A *phone conference* combined with document sharing software (e.g. Net meeting) can easily carry similar communication to a videoconference (Vartiainen et al., 2004, 112).

Instant messaging represents a communication technology that allows the sending and receiving of short text-based messages in real-time and recognizing who else is “online”. Instant messaging is a newcomer among communication channels but has become more and more popular in business organisations. Initially instant messaging was meant to enable discussions between Internet home users and friends, but soon business management realised its potential in informal interaction of business life and started to purchase such software for companies (Cameron & Webster, 2005, 86).

Perhaps the latest direction in communication channels is various web-based *collaboration tools*. In every organisation there is the need for a discussion forum in which up-to-date documents and discussions are available, managed and stored. Therefore it is surprising how little web-based collaboration tools are used (Vartiainen et al., 2004, 112).

As the various channels differ from each other in their ability to convey presence, nonverbal cues such as facial expressions, voice inflections and gestures, personality and even social status, the ability to develop relationships in virtual teams may be hindered. Channel choice is important

as it can also negatively affect team performance and satisfaction (Kayworth & Leidner, 2001-2002, 9).

In this study *face-to-face discussions* are also considered as a communication channel. Nardi and Whittaker (2002, 83) have researched communication in distributed work and characterised unique aspects of face-to-face communication. Face-to-face discussions support informal interaction, attention management, shared activities, touch, and eating and drinking together, all of which are crucial for sustaining social relationships that make distributed work possible. The disadvantages of face-to-face communication, in turn, are that it can be disruptive, effortful and expensive (Nardi & Whittaker, 2002, 83).

2.4.3 Style

Virtual leadership research has tended to adopt a management-centric orientation even though communication between leaders and followers is an interactive process (Connaughton & Daly, 2005, 203-204). This research focus on the aspects of a leader's communication style that foster interactivity, such as the ability to listen and proactiveness. These are studied from both the leader's and team members' perspectives.

Ability to listen

It has been identified that a leader's ability to listen is critical in creating high trust and commitment (Mayfield & Mayfield, 2002, 90; Young & Post, 1993, 39, 41). Listening skills are a key to empathy. A good listener does not only listen but also asks astute questions, is open-minded and understanding, seeks suggestions and avoids interrupting. Active listeners demonstrate acceptance. They listen objectively without judging content (Goleman, 1998, 209; Robbins & Hunsaker, 2009, 90).

Communication problems can develop if listening skills are ignored, forgotten or just taken for granted. Listening is different than hearing.

Listening is making sense out of what we hear. It requires paying attention and empathising with a speaker so that the speaker can be understood from his/her point of view. Active listening has four essential requirements: (1) intensity, (2) empathy, (3) acceptance and (4) a willingness to take responsibility for understanding the completeness of the message by asking questions. Every spoken message contains also subjective information – feelings and emotions – through vocal sounds and nonverbal signals. By listening for these as well as for literal words, the total meaning behind the speaker's message can be reached (Robbins & Hunsaker, 2009, 89-90).

In their research of the interchange of verbal and nonverbal cues, Walther et al. (2005, 56) have found that the affective nonverbal cues used in face-to-face communication are adapted to any remaining communication codes such as text, language, style and emotions in computer mediated communication.

Interactivity

Interactive communication is linked to the ability to listen. It means that leaders can create an atmosphere for discussion in which both sides are active speakers and listeners. Leaders should encourage subordinates to speak and share their feelings, ideas and information. This can be called mutual sense-making. Interactivity is a question of dyadic communication (Cramton, 2002, 356).

Proactiveness

Proactiveness means that leaders communicate actively and share information frequently so that team members do not need to ask for it. It is often a question of timeliness as well. It is important that certain information is given at the right time. Reactivity, in turn, means replying only when asked, which creates uncertainty and doubts about concealing information (Vartiainen et al., 2004, 114).

Typically leaders are aware of their obligation to share information in order to help employees accomplish what they are expected to accomplish. Yet information is withheld, and there are numerous reasons for this. Information can be sensitive or confidential and inappropriate to share. Especially in publicly listed companies leaders have to be conscious of what they can say. In these cases it is important that leaders indicate that they are not at liberty to disclose all information. Information can be withheld also when leaders are dealing with a vast array of issues, working under tremendous pressure and are not even aware that information is being withheld. Furthermore, they often assume that information-sharing channels are open and flowing when in reality they are not. Even though the withholding of information may not have been intended, people experience it as a betrayal, and trust is undermined. Therefore it is critical that leaders create behavioural routines (Reina & Reina, 1999, 84 – 85; Walther & Bunz, 2005, 843).

2.4.4 Awareness of own communication

Leaders' awareness of their own communication practices is also critical in creating a high level of trust and commitment (Mayfield & Mayfield, 2002, 90; Young & Post, 1993, 39, 41). Robbins and Hunsaker (2009, 12-13) state that leaders need to know themselves in order to improve their own interpersonal skills, as self-awareness is a key to emotional intelligence. The more leaders know about their unique personal characteristics, the more insight they will have into their basic behavioural tendencies and inclinations for dealing with others. Internal or emotional self-awareness allows them to challenge their own underlying assumptions and emotions in order to change their current style into a more appropriate one (Robbins & Hunsaker, 2009, 12-13).

According to Goleman (1998, 209), control of one's moods is also essential for good managerial communication. A study of 130 executives and managers showed that how well people handled their own emotions

determined the degree to which people around them preferred to deal with them. In working with colleagues and subordinates, calmness and patience were key (Goleman, 1998, 209).

2.4.5 Summary of the theory

The theoretical part of this study is based on the earlier research of virtual teams, virtual leaders and the communication of leaders. The literature describing virtual teams is used to define the distinctions of virtual teams. They are viewed through the major dimensions of virtual teams, which are geographical, organisational, temporal and cultural. In addition, previous research on the job satisfaction and performance of sales teams are utilised to define virtual team performance. The definition of a virtual leader and description of a virtual leader's role are based on the literature describing virtual leadership, whilst the motivating language theory, various theories explaining communication channel choice and virtual leadership studies are utilised to describe the communication practices of leaders. The research framework is presented below in Figure 6.

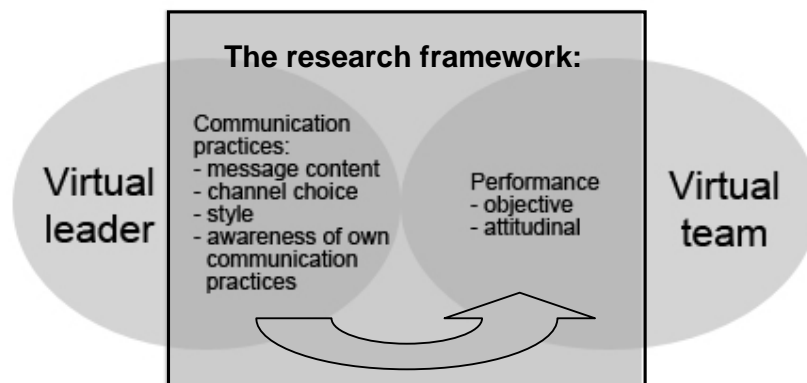


Figure 6. The research framework

3 RESEARCH METHODS AND DATA

This research involves a case study in which interviews were carried out within an international technology company headquartered in Finland. The scope of the study was four different virtual teams within the company. The research questions and the theoretical framework of the study determine what methods are chosen.

Qualitative research methods are applied in this study to provide an in-depth look at the communication practices of virtual leaders in virtual teams in a real business organisation. As Eriksson and Kovalainen (2008, 5) state, one major way to use qualitative research methods in social sciences and business research is exploratory, when prior insights about a phenomenon are modest. Because I wanted collect as rich material as possible and find out what is really arising from the field, my choice was qualitative research. The aim is to study the phenomenon from an unprejudiced and fresh, yet justifiable baseline (Alasuutari, 1994, 206).

In addition to qualitative methods, some quantitative research measures were taken to find out and compare the performance and satisfaction of the teams. Sums, means and standard deviations of performance were calculated and analysed.

3.1 Case study as research strategy

The research strategy involves a case study using detailed, intensive information about an individual case that focuses on contemporary events (Hirsjärvi et al., 2004; Yin, 2009, 8). The case strategy was chosen as it helps deeply understand a real-life phenomenon (Yin, 2009, 18). As Patton (2002, 40) states, the case study method is suitable when the objective is to gain insight into the desired phenomenon. According to Koskinen et al. (2005, 156) case studies provide specificity and a sense of complexity to business research where orthodox theories do not necessarily exist, and

they can be used especially when practices are researched. The communication practices studied in this research have not been properly investigated before from this point of view.

According to Koskinen et al. (2005, 45-46) a case study of one company enables focusing. When only one company is selected, it can be studied thoroughly. This increases credibility as the setup enables only a limited amount of conclusions (Koskinen et. al, 2005, 45 – 46).

The embedded case study design is used in this study because more than one unit of analysis is involved (Yin, 2009, 50). Even though the case study involves one company, the analysis includes four different teams and their leaders and members in different parts of the organisation. The levels of analysis are the team and individual level, as the interviewees work in teams and communication practices mostly take place in dyadic interactions.

3.2 Data collection

In this chapter the data collection methods are represented and discussed.

3.2.1 Interviews

The data collection method in this study is the semi-structured interview. Hirsjärvi et al. (2004, 197) explain that in semi-structured interviews the themes are known but exact questions are missing. The order of themes can change in interviews. The semi-structured interview was chosen as it mainly elicits the interviewee's opinions and leaves the researcher's perspective in the background (Hirsjärvi & Hurme, 2001, 48). As Hirsjärvi and Hurme (2001, 35) have stated, this form of interview is suitable when the question is about a rather unknown phenomenon.

The interviews were carried out in November – December 2009. Altogether 16 persons, four persons from four different teams of the case company, were interviewed in detail. The leader and three members of the four teams were interviewed. The teams represent the sales and business management of the company and were chosen so that they have similar targets and are as widely geographically dispersed as possible.

Before the real research interviews, two pilot interviews were carried out in order to test the interview frameworks (Appendices 2 and 3) and the interviewer's ability to conduct semi-structured interviews. The interview guide (Appendix 4) was created to support and guide the interviewer in the interviews.

As research into the communication behaviour of leaders in virtual teams is scarce, it was difficult to know the directions of answers beforehand. The interview frame with some explanations of the terminology was sent to the interviewees a few days before their interviews so that they had the possibility to orientate to the topic. Hirsjärvi and Hurme (2001, 107) suggest the so-called funnel technique that was used in the interviews. First some background questions were asked, then extensive easy questions which led to the subject. These were followed by more detailed questions about communication practices and team performance. The interviews were concluded with some extensive questions about development ideas on the general level.

Four interviews were carried out face-to-face, 11 by phone. One of the interviewees gave his answers in writing as it was complicated to find a suitable interview time before his long vacation. Additionally, one of the interviewees completed his answers in writing after the interview. The face-to-face interviews were carried out at the interviewees' workplaces and recorded by MP3 player. Phone interviews were recorded by mobile phone. Eight interviews were carried out in English. Two of the interviewees spoke English as their mother tongue. Seven interviews were

carried out in Finnish. At the beginning of each interview, before the recording was started, the interviewee had a chance to ask questions about the themes and terminology of the interview. This was important to make sure that the terms were understood similarly by both the interviewee and the interviewer. The recordings were transcribed into text files that were used for coding and analysing together with the written answers.

The interviews lasted a total of 10 hours 33 minutes. The shortest interview took 16 minutes and the longest 74 minutes. The average interview time was 42 minutes.

The interviews were supported by a questionnaire (Appendix 1) with which information on team performance, both objective and attitudinal (job satisfaction), was gathered. The interviewer completed the forms together with each interviewee. The objective performance was asked from team leaders. The questionnaire included team targets and how each team has reached its targets. One of the objective targets was the annual sales or order intake in every team. The other objective was team-specific, meaning that it was specifically defined for the team.

Information about job satisfaction was collected from team members by using a five-point Likert scale for each statement with possible responses ranging from 1 “strongly disagree” to 5 “strongly agree” (Appendix 1). Three of the most commonly used dimensions of job satisfaction were measured: work, leadership and company management. Each dimension included four statements.

3.2.2 Interviewees

I started the research work by having a face-to-face meeting with the president of the case company, which is also my employer. My aim was to be able to study four different teams that operated partly or totally virtually, whose members were as widely dispersed geographically as possible and

whose objectives were related to sales or order intake. The aim was not to focus on any individuals as interesting cases but on communication behaviours that can be studied by using several individuals as instruments in the study. After presenting my research plan we agreed on the study.

The case company is a Finnish machine building company that operates globally. It employs 550 persons of whom more than 50% live and work outside Finland. Many functions, such as engineering and component manufacturing, have been partly outsourced to expert companies. The company has an extensive network of subsidiaries and representatives worldwide. The organisational structure is that of a matrix organisation where experts in all functions and core processes are spread around the world. Almost all teams in the company are partly or totally virtual.

The case company faced several changes during course of the study. Firstly, due to the global economic recession the company had to resort to layoffs, dismissals and changes in the organisational structure. Secondly, another publicly listed company announced that it will acquire control in the case company, but the acquisition process had not started before the interviews were carried out. It is difficult to say to what extent these changes affected the results of the study with the exception of the economic recession, which naturally had an impact on the sales and order intake targets of the teams. They were not met in the year in question even though they had been met very well and even exceeded in some cases during the preceding years.

The interviewees were leaders and members of the four virtual teams, which I named A, B, C and D. The leader and three members of each team were interviewed. Most of the teams had more than three members, but in this study the number of interviewees was limited to four per team. Similar themes and answers were repeated in the interviews, and hardly any new topics arose in the last interviews, so the amount of interviews can be considered sufficient for the study. The interviewees were assigned

numbers from 1 to 4, the leaders being number ones, such as A1, and other members numbers 2 to 4, such as A2, A3 and A4. The members chosen for interviews represent both co-located and virtual members. The invitation letters were first sent to the leaders of the four selected teams. As soon as they had responded positively, invitations were sent to 12 team members. All invitations were sent out by email. Ten of the 12 invitations sent to members received positive replies, after which two more invitations were sent out to receive 12 positive responses.

The targets of all four teams were somehow related to either sales or order intake. The team members of all four teams work very independently in their own sales territories or business areas. The teams represented two different business units of the company, and they had worked together under the current leader for six months to five years without major organisational changes. The teams were geographically dispersed so that Team A had members in Central Europe and Australia, Team B in Finland, Australia and South America, Team C in Finland, South America and South Africa and Team D in Finland and Central Europe. Most of the interviewees were located in some subsidiary office of the case company, a few in the headquarters and a few in their own home offices. Interviewees in Teams A and B had known their team members well before they joined the current teams. Most of them had worked in the same teams previously. All interviewees were male. The interviewees spoke various native languages but the company language was English.

The following communication tools were in use at the case company during the study: phones and cellular phones, email, instant messaging (IM), net meeting (two or more attendees) and web-conferencing. Additionally, in Team A the leader used the Voice over Internet Protocol (VoIP).

The following table (Table 3) illustrates the interviewees and their teams.

	Team A	Team B	Team C	Team D
Age of the team	5 years	1.5 years (but members knew each other well from the past)	0.5 years	0.5 years
Team members (location)	Australia, various locations in Central Europe	Finland, Australia, South America	Finland, South Africa, South America	Finland, various locations in Central Europe
Working in home office	partly	no	no	partly
Communication tools used	Phone (VoIP) and cellular phone, email, net meeting and web-conferencing (rarely)	Phone, email, net meeting (rarely)	Phone, email, IM (partly), net meeting rarely	Phone, email, net meeting rarely

Table 3. Teams incorporated in the study.

3.3 Data analyses

Qualitative research methods were mainly used in the analysis of the study. Eriksson and Kovalainen (2008, 129) state that in social sciences there are two main strategies of analysis: induction and deduction. Inductive analysis proceeds from empirical research to theoretical results whereas deductive logic rests on the idea that theory is the first source of knowledge and proceeds from theory (Eriksson & Kovalainen, 2008, 22). However, they rarely exist as distinct alternatives but can be combined as abductive logic. In this study abductive logic was followed. Certain theoretical concepts were available from prior research, which helped in describing and analysing the empirical data. As described by Eriksson and Kovalainen (2008, 23) the process then moved from meanings given by interviewees to categories and concepts that created the basis for understanding the phenomenon described.

I started the analysis already while conducting the interviews when I paid attention to recurring and new themes. I analysed the data basically in three steps: 1) arranging the data, 2) categorising the data and 3)

conceptualising and making conclusions. However, these steps did not follow each other in a linear way but also overlapped each other.

The data was arranged so that all interviews were transcribed and saved as text files. The transcriptions were made verbatim, and only some unnecessary filler words were left out. The transcriptions included a total of 69,064 words and 111 pages of text. The average word count of one interview was 4,604. I started to read the transcriptions one-by-one as they became ready and continued reading through them several times.

The material I gained in the interviews was information-rich as both leaders and members were interviewed. I began categorising the data by organising it according to the initial themes of the theoretical part. At this stage I started to utilise Excel spreadsheet software. After this I continued by compressing meaningful contents into codes. This I did first with coloured pencils on paper and later with Excel software. When combining and modifying the codes, some of them dropped off and some were renamed. I created main categories and subcategories of codes. I realised that most of the codes fit in well with the themes of the theory, but a few codes, such as home office, travelling, weak signals and new employee, were new. After this I organised the codes to correspond to my research questions regarding the virtual team's distinctions, leader's role and communication practices.

Not to leave the analysis at a descriptive level I continued by conceptualising and making conclusions. I examined the results apart of their context too and conceptualised them by seeking wider applications. I "played" with the data, searched for links between codes and combined them into "families". I utilised the theoretical part of the study in making conclusions, compared the empirical findings with the theory and searched for points where my results differed from the literature.

The data for team performance was collected by a questionnaire in the interviews. The data was quantitative but was not thoroughly analysed with quantitative research methods. However, some preliminary analysis was made. The two objective targets of the teams were measured as a percentage of the actual amount of the budgeted amount. A mean of the two percentages was calculated to indicate the objective performance of each team.

Information on attitudinal performance (i.e. job satisfaction) was collected by using a five-point Likert scale for each statement with possible responses ranging from 1 “strongly disagree” to 5 “strongly agree” (Appendix 1). Each dimension included four statements. The responses of each interviewee were summed so that inverse statements were given inverse value. Team members’ scores were totalled to indicate team satisfaction. In addition, standard deviations of job satisfaction were calculated.

4 FINDINGS

In this chapter the findings of the research are discussed. The sub-chapters follow the same logic and order as the topics in the theoretical part of the study. The findings are presented in a prioritised order, meaning that issues that were mentioned more often in the interviews are discussed first in each sub-chapter and then other issues follow according to the same logic.

4.1 The distinctions of the virtual teams

The distinctions of the virtual teams are defined by how the team members consider various dimensions of virtual teams. The teams I studied varied to some extent in what dimensions they regarded as most challenging in virtual dispersion. Geographical, temporal and cultural dimensions were also regarded as advantages.

4.1.1 Geographical dispersion

Geographical dispersion was considered the most challenging dimension. Because of long distances team members rarely had a chance to meet each other. The global economic downturn had affected the case company's spending rules, and travel budgets were cut to the minimum. Therefore the teams had met even more rarely during the past 12 months than in the preceding years normally. The average frequency of face-to-face meetings in the teams studied was twice a year. In particular, the lack of opportunities to discuss informally during lunch and coffee breaks, share ideas and learn from each other was regarded as negative in all teams. This was emphasised in Teams A and D where people worked in smaller or home offices.

A2: I think the biggest problem is the fact that we are all working in different countries, and we don't get chance to meet face to face very often. And you miss out on the opportunities to exchange ideas, and the way that a conversation develops, and that new ideas can come out of that discussion, like you can have over lunch in the canteen at the headquarters or having a coffee together. That's simply not possible with our dispersion.

Informal coffee break discussions were a really important source of information, and they offered team members possibilities to do sense-making together. In addition, inventions and ideas may be created during coffee breaks. Many of the interviewees said it was absolutely impossible to create long-lasting and fruitful social relationships without meeting each other face-to-face. As persons working in home offices are missing these informal discussions, leading from home office was found especially challenging. A leader in a home office is really dependent on his own leader's communication.

Rare face-to-face meetings were seen as a disadvantage in all teams. If team members did not know each other from the past, and face-to-face

meetings were rare, it was very difficult to get to know each other privately in the virtual team. In addition, as the teams were mostly led one-to-one, and if team members saw each other face-to-face a maximum of twice a year, members could have difficulties seeing the team as a team. This diminishes co-operation, collegial support in problem situations and idea sharing in the team, which can cause some double-work.

B4: The negative side is that we certainly have similar problems, similar challenges, and everyone is trying to find his own solutions. So we certainly do some double-work, and people tackle with the same problems in their own ways.

In the contrary situation, being located in the same office or same country connected members inside the team. The relationships in the team varied according to whether they were co-located or not.

B4: It is an advantage that we are even the two of us here, so that one can get collegial support. We are in similar situations and can mentally support each other; it is really important.

Also, former mutual co-location glued members together, even if they later worked far away from each other. This is a challenge to leaders, as all members should have a similar feeling of presence and belonging no matter where they are located and what their histories are.

B1: I can adjust my communication style according to person in question. It is mostly unconscious.... the number of communication problems have decreased as both parties know each other well, and now that other one knows, too. So it is the long mutual history that affects the issue.

Communication was found challenging in geographical dispersion. It was specifically mentioned several times in the interviews that geographic dispersion required more co-ordinated and disciplined communication.

Many of the interviewees said that virtual leaders should have more time for communication. In addition, the communication of leaders needed adjustment according to the workload situation of team members, different markets and cultures. The requirements of frequency and quality of communication were regarded much higher in virtual than traditional teams. This was emphasised in Team D, which was rather a young team whose members worked in home offices.

A1: But I have to stay in regular touch with the people in my team. It just means discipline in making regular phone calls.

D3: It is essential to understand the requirements that this kind of virtual leadership sets compared to face-to-face situation. More and timely support is needed, so that also informal issues reach this kind of virtual organization.

D1: Regular contacting is the point..... Also sufficient and good quality feedback, also negative, is needed. Attention should be paid on how the feedback is given.

The major advantage in geographical dispersion was global coverage 24 hours a day. The company could provide better local support internally but especially externally; they were closer to the customer, could rapidly visit customers' sites and have more intensive contact with the customer. Local presence enabled better understanding of the market, and local people serving local customers decreased the possible cultural differences between the company and its customers. This advantage was considered rather similarly in all four teams.

B1: The reason why we are geographically dispersed is that we are closer to our customers. Thus we can support customers much better, without delays. And as we are providing services, we need to be there quickly, short response times to customer requests. And when are locally there, we understand the market much better.

Interestingly, geographical dispersion was seen as an advantage as it means smaller offices, even home offices. This was emphasised in Teams A and D. Team members working in smaller offices usually had more productive working time than people in bigger offices. They had fewer distractions, less phone calls, and more time to concentrate on longer-term issues.

A1: The advantages are in that working from a much smaller office, I get a lot less distractions. Sitting in my office (at the headquarters), typically I would have one or two more people in my office and several phones ringing, which made it too hard to do the regular thing. But sitting here on the other side of the world, I can really get some peaceful time to work on longer-term issues.

Flexibility was also a positive factor; a team member could arrange his schedule more freely and did not need to sit in traffic jams. Working in a home office could be seen as a negative factor as well in terms of increased responsibility in ICT matters and other practical issues, the self-discipline required to work fixed hours, and the fact that a team member could never close the office. Working in a home office requires an independent and multi-skilled person, so a young, inexperienced person should not be hired to work in a home office. Working alone for a longer period could cause "cabin fever". Additionally people may think a person working at home is available for work issues 24 hours a day. Team members in smaller and home offices were also more dependent on support from the headquarters, which obviously is an issue that has not been realised at the main office.

A2: The other problem with dispersion from the main offices, is the lack of response from the headquarters to our requests for information. Being far away from the place where the data is stored is a problem. Sometimes individuals have specific knowledge of

something that would really help me do my job, and I don't, I often don't get response, so that's quite frustrating.

4.1.2 Temporal dispersion

Time was considered the second most challenging dimension of virtual teams. Time differences especially in Teams A, B and C meant working at inconvenient times outside office hours. The leaders interviewed felt it challenging to organise net meetings with teams as the time differences were so wide. Travelling complicated the situation even more, especially in teams where all members travelled a lot and were very busy. When a person is travelling, he can be in an area where no Internet or phone connection is available. In addition, team members were reluctant to contact travelling colleagues or leaders, as they do not know where and in which time zone he is.

A1: The biggest challenge is not language or culture, it's simple, time. Most of my subordinates are half a world away and at least eight or ten hours time difference. So it's possible to make email communications easily, but to make telephone conversations, generally one of us is working at an inconvenient time. And all the people in my team travel a lot, so it complicates it even more.

On the other hand, time difference was seen as a positive factor as it sometimes gave more time to think and pass the information forward, especially in email communication.

C4: Time difference, in fact, is an advantage as there is always reaction time. For sending a feedback or message received from Finland forward here, there is always four to seven hours reaction time, which is very good.

A4: If you think about the time difference we have, it gives you sometimes lots of time to think a little bit more certain things. You

don't have to make the decision straight away, so it gives you a little bit time to think.

In addition, members with long experience in the company were so used to time differences that they were not bothered by them anymore.

4.1.3 Other dimensions

Nationality or culture did not seem to have a negative impact on working in virtual teams. However, understanding different cultures required experience. Some of the interviewees regarded themselves as "global players" who are experienced in working in multicultural environments.

Nevertheless, cultural differences existed. Communication was different in South America than for example in Scandinavia. People in Latin countries preferred face-to-face communication and relied much more on body language than their colleagues in Scandinavia. Finnish people were also considered to be even too direct in their communication, expecting other people to commit right away, which was not always the case. Cultural differences could affect the communication activity as well. In some cultures, team members may have thought that they cannot contact a leader or give him feedback.

B1: There are cultural differences. In some cultures people may think that I cannot contact a leader, what is really not the case, but this is how it goes.

Cultural differences were mostly seen as a positive factor in all four teams. They created good benchmarking opportunities and opportunities to learn from people's experiences and different cultures and philosophies, although management methods were regarded quite similar in the industry globally.

A virtual team leader should have sufficient skills in English and good common knowledge. Different native languages created a few challenges. When English was used for communication and was not a mother tongue, it could be challenging to understand the real message of the discussion. The language could be even too direct and awkward as it was not a native language, and nuances were missing.

C2: Then there are people who don't speak English as native language, so then the communication, if we go to nuances, in English is much more straightforward and awkward than it is in everyone's mother tongue, and when you can see the other one and discuss face-to-face.

Some leaders felt it challenging to create a message that was understood similarly by all team members, especially in situations when team members were leaders of their own virtual teams and they needed to carry the same message forward to their team members.

In addition it was mentioned that language issues can be more challenging to new employees who are not used to the vocabulary used in the industry and company.

Organisational dispersion was not recognised at all in the interviews. The only individual comment was that roles and responsibilities should be clear between teams. This can indicate that organisational dispersion does not create any challenges, or that the interviewees did not recognise any organisational dispersion in their teams.

4.2 Leader's role in a virtual team

The role of leaders in the teams I studied was mostly related to clear targets, giving support and organising mutual face-to-face meetings to

increase team coherence. The third topic that clearly came up in the interviews was that of trust.

4.2.1 Clear targets

The members in all four teams had similar roles, and they worked very independently in their own market or business areas. All of them felt that they had freedom to operate their own business without control, as well as their own targets that leaders combined to company targets. Clear and simple targets, as well as clear roles were mentioned as major issues in terms of the responsibility of leaders. Leaders and members defined the targets together. The targets in all four teams were mostly figures, so they were rather easy to communicate.

B3: The more important challenge is to have clear goals. And then you have a common follow-up on this. Distance is not a problem, language is not a problem. Only if objectives are clear.

Not only targets but also development tasks should have come through the team leaders. This way the focus could be correct.

Most of the interviewees felt that daily communication with their own leader was not necessary as sales cycles were long. Targets were followed on a monthly basis, and they were easy to report as they were figures. In virtual teams the targets should be measured against local conditions.

D1: All markets need their own way to operating in a way, and in that sense it is extremely important that targets are thought together, and what issues should be taken into consideration in each market area.

Annual face-to-face development discussions too were a great opportunity to gain a status report of actions and to prepare future plans together. Regular face-to-face and phone discussions with team members were important in reminding them of goals and keeping the basics in mind. In

addition, regular but not too frequent visits to the local offices of team members were found to be necessary, especially if a team member was in charge of a local team or organisation.

Because of the independent roles of team members, they felt that they had responsibility for their own work and decision-making courage. The leaders mostly led their team members one-to-one, not as a team. Obviously this was a result of the members' independence and individual targets. However, the leaders encouraged the members to co-operate mutually.

4.2.2 Role of trust

The second major factor that was mentioned was trust. As team members work independently, trust was seen as a necessity between leaders and members in all four teams. It was easier to create trust between team members if the roles and organisational structures were clear and if there were not too many overlaps, gaps or conflicting personalities in the team. In Team A the co-operative environment nourished trust, natural cross-interaction and good relationships. Also long mutual co-operation helped in maintaining trust. In Teams A and B trust was established as a result of their long mutual history:

A3: This team is based on grown relationship. It's already a long time that you've had a relationship, and then you have built up trust and mutual understanding. If nothing special pops up in your head, everybody's trusting each other that he is doing his job in the right way, that is done, without the for real, let's say, control.

As trust is not part of the theoretical framework of the study, the interview topics did not cover creating and maintaining trust in teams and the role of leaders in it. However, it appeared that leaders who did not control too much, did not stick to details, were active listeners and open to team members' ideas naturally created a trusting environment. This could be seen in all four teams.

How could a virtual leader best support the performance of a team?

A4: I guess that's again about trust. It doesn't make sense if you start controlling way of leading in such a virtual team. So the people need some freedom, the people need some responsibility. Of course, feedback helps as well. And you have to be able to tell him what's good, what's not good, or what you like and what you don't like.

Trust existed in all teams no matter how long members had worked together. However, in teams with a short mutual working history, the leader's role seemed to be more critical in creating a positive atmosphere with communication. Turbulence in the company and organisational changes had affected Team D more than other teams, which made it harder to build strong intra-team relationships.

4.2.3 Support from a leader

In all four teams the leader was seen as a consultant or mentor who is not interested in too detailed issues but who sets frames and is available to support. Instead of dictating, the leaders tend to discuss and create mutual co-operation with their team members.

B1: As we have worked long together, the superior-subordinate set-up appears in official or difficult issues, otherwise we are working more like colleagues and friends together. It reflects our management culture here.

Generally, the team members in all teams felt that the leader is there to support them, but due to time differences or travelling he could not always be available to respond within the necessary timeframe. This aspect was emphasised in the answers of Teams A and B.

A2: But he is also under a lot of pressure and he is also travelling a lot. And he doesn't, he's not always able to respond in the timeframe that's necessary.

Motivating was more challenging in virtual environments than in co-located settings. The importance of feedback was specifically mentioned in the interviews. Feedback was required on progress in general and whether action plans and budgets had been approved. It was considered frustrating if there was no feedback on these kinds of issues. The fact was not emphasised in any of the teams particularly; it came up on an individual level only and reflected the relationship and communication frequency between the leader and the member in general.

Most of the interviewees mentioned the importance of face-to-face discussions, not only with the team leader but as a complete team. In addition to formal discussions there should be enough time reserved for informal discussions.

D2: I strongly recommend to have let's say informal, formal plus informal meetings at least two three times per year to share the spirit.....Back to that, what is the most important, from my point of view, for such a face-to-face meeting is to create relationships and create common understanding.

It seemed that leaders had an important role in organising the meetings. Face-to-face meetings were considered even more important in Team D, which was a young team starting its mutual working.

D1: We just have to organize this kind of face-to-face meetings at least two to three times a year. It is just so difficult to create team spirit by talking on phone. It requires, that people can personally meet and discuss, and everyone can talk and listen to each other's experiences and ways of solving problems.

The leader's role in active communication was more important when the employee was new. It was difficult to brief and train a new employee in virtual settings. As a result, a decent back-up system and clear plans in fatalities, for example, were considered important. In addition, a leader should socialise with a new employee in his normal environment for a while to gain an understanding of his culture and style.

B1: If somebody decides to go, and if he decides to go to competitor, it means that we need to react immediately. Therefore it is important to have sufficient substitution in place.

A4: First of all, I need to know the guy, so at least I should have met him once, or let's say a little bit in the socializing way or need to know him also in his normal environment. So I would say you have to visit him where he is working to get an understanding about the culture, this kind of things. And also the best is if you have time and to get more view into his style, what he likes, what he doesn't like.

Many of the interviewees said that the virtual leader should demonstrate social competence, empathy, sensibility and an ability to make relatively fast evaluations of members and their abilities in order to figure out how to handle them.

A3: Because, in a normal office, you have much more often possibility to discuss issues and get a feeling how a person thinks and how he works. And as a virtual leader I think, you must have the ability to do this with minimum possibilities to meet, to get this information, and then be able to interact based on this information.

Some interviewees mentioned that training should be provided on virtual communication to everyone in a virtual team. Working in a virtual environment is a rather new phenomenon that has not been taught or discussed at school.

4.3 Communication practices of leaders

The communication practices of leaders were regarded quite identical in terms of channel choice, interactivity and the ability to listen in all four teams but varied in terms of message contents, proactivity and frequency between the teams and even within the teams.

4.3.1 Message content

In the interviews all three message contents categories – direction-giving, affective and sense-making communication – were considered necessary. Affective communication, especially small talk and jokes, was used when travelling together or to soften tough situations and add joy to the work.

What about this affective communication, small talk and jokes?

A4: We have a lot of that. A lot of jokes [laughs]. Yeah, otherwise you can't survive, and there's not enough money you can pay us for taking all the problems, complaints and things coming out of the money, so you have to survive in other ways. And that's I guess done by irony and jokes and yeah, black humour.

B4: I would say we do mostly direction-giving and sense-making. Affective communication exists if we travel together, we have no restrictions.

In all four teams all categories were covered but direction-giving somewhat dominated the communication. Direction-giving is necessary to give information on the work itself. In both Teams A and C one member felt that communication was only direction-giving.

C1: It is a little bit of all those three categories, but mainly direction-giving.

A2: I would say that our communication is almost exclusively direction-giving. Mainly information exchange, clarifying of, or prioritizing what we're going to do. Very rarely direct instructions, it's more sharing information.

Sense-making was mainly needed at the beginning of employment but was also important for a leader to get information on local markets and cultures from team members.

B1: Sense making is more for new employees, and then its share diminishes, in this kind of old team we don't much do sense-making. However, if the culture is unknown to me in the country in question then we do sense-making.

4.3.2 Communication channels

A face-to-face discussion was considered to be the best communication channel among the interviewees, but as it was not possible in most cases, email and phone definitely dominated the choice of communication channels among leaders.

D2: It is a biggest psychological problem of the people that they cannot personally meet and discuss, face to face.

The customer relationship management (CRM) application of the company was considered a good information sharing system. In addition, two leaders would have wanted videophones in use and a few interviewees suggested videoconferencing and collaboration desktop software with integrated instant messaging.

C3: We have good tools such as Vineyard (CRM), but if the tools are not regularly updated, it is of little help.

B1: Videophone would be good as you can see from facial expressions what is going on.

Other channels were considered somehow clumsy. Separate (not integrated to other systems) instant messaging was not used by the majority of the interviewees because of time differences or because it did not feel familiar. Net meeting was used only a little, mainly because the connections were so poor and the system was complicated to use. Technical problems caused frustration. In addition, it was difficult to arrange meetings because of tight schedules and time differences.

C1: Considering the time differences I cannot really arrange even a net meeting. The difference between extremities is 11 hours which makes it complicated. It would be very good to have mutual discussions, but these time differences make it really difficult.

Communicating by phone was preferred because it is easier to expand the conversation, it is personal and quick, and it is easy to discuss, so things get solved right away. Phone was also considered good while travelling, for example in the jungle there is no Internet connection for emails. The disadvantages of communicating by phone were that issues agreed on phone can be more easily forgotten as there is no written record of it, and if everything is communicated by phone it means sitting on the phone for the whole day.

Can you think why telephone is the most useful?

A1: Generally, if you send an email, then the next day you get questions back on what may not have been clear or something they knew which I didn't know. So you tend to have probably three or four evolution visits by email, whereas by telephone they can express the things they know about the situation and then you can counter. I think you can get the discussion over much more quickly on the telephone.

A2: On phone it's easier to expand the conversation. Because our discussions are infrequent, we may have an agenda when we start speaking, but the agenda expands as we share ideas. And it's easier to expand those by speaking rather than by email.

A3: So that means even if you send an email, you are not sure that your message has been received, so, if something is needed, then you have to pick up the phone and make sure that the information has been received. Even when you say I sent you something to have a look on, better to check it up, if it is received and, time available.

The reasons for choosing email were diversified. Email was considered efficient and good for facts, confirming and informing many people in the same way at the same time. Using email does not create costs. On the negative side email was considered more unclear than phone, impersonal and slow, as responding may take days. In addition, too many emails are received during a workday. Emails also become a written record which can be archived for future use. This is both a positive and negative issue.

D2: Mostly we are communicating via e-mail because it is a rather efficient, not too much costly and you can express everything in a very short way.

C2: Instructions mostly by email, so that they are delivered similarly around the world.

A1: I would be reluctant to put those things by email. It becomes a written record, and I think development issue is something you may not want to put in the public domain. And always with the development, it's never so black and white.

In Team A the phone was mainly used for direction-giving, whilst email was considered as a confirmation channel. The leader also made VoIP calls

and sent SMS messages (short message service) by mobile phone. In Team B the situation was the opposite: direction-giving took mainly place by email, and important issues were confirmed by phone. In Team C the situation with the channels was similar to Team B, and Team D balanced between email and phone 50-50. Effective communication in all teams was mainly small talk that took place in face-to-face discussions, for example when having lunch or travelling together, at the beginning of phone calls, or in emails, for example, after vacation. Sense-making was a regular phone issue or took place in face-to-face discussions.

4.3.3 Style

Ability to listen

The ability to listen was considered an essential component of work by all the leaders interviewed. They all felt that they have the ability to listen, and some of the leaders considered that they listen more than they talk. All team members said that their leaders had the ability and willingness to listen, which they considered very good.

In addition, over-communication, such as calling team members by phone even without any special reason, was felt to be a very good way to find out how things are going and notice possible weak signals.

D1: In this kind of virtual setting it is really important to listen actively, support and be awake. Because there is no possibility to influence with personal presence. Therefore it is rather important to be even too active in communication, and be in touch without a certain reason, as during conversations reasons often arise. You cannot notice those weak signals unless you pick up the phone and call.

Interactivity

All interviewees in the study felt that the communication between leaders and members in all issues was interactive. They found it really important that both sides shared opinions and thought together. Three of the

interviewees mentioned that interactivity worked well by email too. In addition, three interviewees stated that their leaders were challenging them with questions and statements, so they had to be prepared to give arguments, which improved discussions.

C4: Yes, I would definitely say that the communication is interactive.

A3: So that means, when there is a contact, then every time the discussion goes much further than it goes also, in both directions. It's, I think, in this way, it's also a two way street, it's not a one way street.

A4: It's an interactive thing, in all kinds of issues. It's also a matter of how good is your relationship or what kind of relationship you build up.

Proactiveness

The leaders in all teams were most active in major issues, such as setting targets, annual planning, budgeting, reporting and big sales cases, especially when they were close to a deal. The leaders of Teams B and D were also active in giving positive feedback. Only the leader of Team B said he was active in communicating future changes, yet two members of Team C mentioned that their leader was active in communicating future changes.

A4: He is proactive in some of the sales cases. He is proactive of course in the direction we want to go to, he communicates that very well. Yeah, that's what it is. It's not like he is proactive in that sense that he calls me every five minutes and says "have you done this, have you done that and please do this and that", which leads to nothing. But he is proactive in major issues.

B1: I have been trying to be proactive in communicating targets and giving positive feedback.

The proactiveness of leaders in communication seemed to be an issue dependent on case and workload. Other reasons for not communicating more actively were that the leader did not have the information any earlier than the team members, and that the leader was not allowed to share the information even if he wanted to. Team members felt it annoying if they heard a piece of information from someone other than their own leader. The situation can be unpleasant for the leader as well.

D1: It is not right that information to team members comes from somewhere else than own team leader. The leader in those cases start losing his status and respect, if you don't get information directly from own boss but you need to find it somewhere else, well that is the beginning of the end at that stage.

All of the leaders regarded regular communication with team members important, but some of them admitted it was difficult to implement because of travelling and hectic work days. It would need strict prioritising, discipline and concentration on communication. Once a week or twice a month was considered a good frequency of one-to-one phone calls.

B4: The most important is regular communication, that leader calls, talks and listens.

Some interviewees said that in addition to a few face-to-face meetings as a complete team during the year, it would be beneficial to have regular team net meetings on a monthly basis to keep the team glued and informed on each other's projects.

C3: I could only repeat that, that it is really necessarily that you have certain numbers of face to face meetings.

This came up in all teams but was emphasised in teams where team members substituted for each other during vacations and other longer absences. Based on the interviews none of the four teams had regular net

meetings as a complete team, which obviously reflected the fact that the team members had independent roles and were mostly led one-to-one and not as teams. The leaders of Teams A, B and C admitted that they should be more active. The leader of Team D said he maintained frequent communication; otherwise he was not up to date.

Regarding the communication frequency of leaders, it was not clear how often the leaders really communicated with their team members in each team, but there seemed to be most deviation in frequency between team members in Team A.

The importance of fair and transparent communication by leaders was emphasised in the interviews both by leaders and members. All team members should be treated similarly. Especially members in home offices should not feel disconnected or that they are left aside.

Even if the general thinking in the interviews was that the leader is responsible for active communication, some interviewees mentioned that members also have a responsibility to contact their leaders if they need help.

A4: I get all the support I need. If there is a point of discussion, I can send him an email or pick up the phone. In that sense, i'm getting quick response and support.

In addition, a general impression was that active communication by a leader increases the activity of team members in communication, although one leader had an opposite comment:

A1: I'm sure that if my communication went to nothing, they would communicate between themselves a lot more [laughs].

4.3.4 Awareness of own communication

Awareness of one's own communication was perhaps the most difficult part of the interviews. The answers were really mixed. I have a feeling I could not in all cases explain well enough what I meant with the question, and even if I did, an interviewee could not necessarily evaluate it. Either he did not know his leader well enough in intercommunication with other people or the communication was such an unconscious area for a leader that he could not evaluate it.

All in all, all four leaders thought they were aware of their communication behaviour and adjusted their communication at least to some extent depending on the team member, his nationality and workload situation, even if some of their team members thought the opposite. One leader said he was empathic but it was mostly unconscious, and another leader said communication was more challenging with a new employee as it was difficult to know what drove his decision-making.

The team members gave such mixed answers regarding their leaders that it was difficult to make any conclusions.

4.3.5 Summary of communication practices

The communication practices of leaders were considered quite identical in terms of channel choice, interactivity and ability to listen in the four teams interviewed but varied in terms of message contents, proactivity and frequency between the teams and even in the teams.

The messages of leaders in this study were divided into three categories: direction-giving, affective communication (mainly small talk) and sense-making. All these categories existed in all four teams but direction-giving was emphasised in Teams A and C. Email and phone were the most used communication channels in direction-giving in all four teams. In affective communication and sense-making the channel choice was in most cases

phone, but face-to-face discussions also took place when possible. The leaders were proactive in major issues, such as annual planning, budgeting, targets and large sales cases, but there were differences in communication frequencies. All leaders were interactive in their communication and demonstrated the ability and willingness to listen their team members.

In the following table (Table 4) I have simplified and summarised the key findings of the communication practices based on the interviews.

	Team A	Team B	Team C	Team D
Message content 3 categories: direction giving, affective communication and sense-making	All included, direction-giving emphasised	All included	All included, direction-giving emphasised	All included
Channel choice A) direction giving B) affective messages C) sense-making	A) Phone, confirmation by email, if needed B) Face-to-face, phone (email) C) Phone	A) Email, phone for confirmation (face-to-face) B) Phone (face- to-face) C) Phone, face- to-face	A) Email, phone not that often B) Phone, face- to-face C) Face-to-face, phone (email)	A) Email and phone 50/50 B) Phone, face- to-face C) Face-to-face
Proactive	Larger projects, targets, major issues	Targets, positive feedback, Vineyard (CRM), strategy and annual planning, reporting, instructions	Annual planning, targets, instructions, future changes, crisis situations	New procedures, targets, annual planning, positive feedback, reporting, sales cases
Interactive	All communication	All communication	All communication	All communication
Ability to listen	Yes	Yes	Yes	Yes

Table 4. Summary of the communication practices

4.4 Team performance and satisfaction

In this study, team performance is measured by assessing the perceived objective performance and the job satisfaction of team members. Teams A, C and D were rather homogenous in terms of objective performance, whilst Team B was closer to their targets. All four teams were rather homogenous in job satisfaction on a team level, even though there was wider deviation in job satisfaction on an individual level.

4.4.1 Team performance

In this research the two main targets of each team are used as an objective measure of the team. One of these objectives is the annual sales/order intake in each team. The other objective is team specific, meaning that it is specifically defined for the team.

The two objective targets of the teams were measured as a percentage of the actual amount of the budgeted amount. A mean of the two percentages was calculated to indicate the objective performance of each team. One of the targets was the sales or order intake target of each team, and the other target was a team-specific target, meaning that it had been specifically defined for the team.

The mean of the achieved objective targets varied from 65% to 88.5%. The maximum percentage would have been 100% if the targets were fully met. Team A with 72.5%, Team C with 70% and Team D with 65% were rather homogenous in their teams' objective performance, whilst Team B with 88.5% was closer to its targets. In the following table (Table 5) the mean of objective targets reached in each team are described in percentages.

Team	Mean of the two objective targets (%)
Team A	72.5
Team B	88.5
Team C	70
Team D	65

Table 5. The team objectives targets reached.

In the figure below (Figure 7) the same is illustrated graphically.

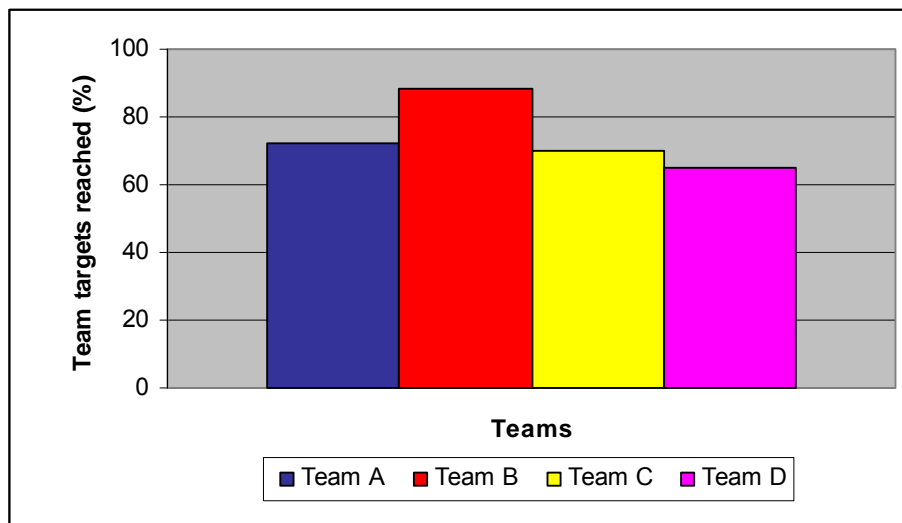


Figure 7. Graphics of the objective targets achieved by the teams

In 2009, when the interviews were carried out, the global economic downturn made it an exceptional year. A decrease in sales volumes was a reality in many industries including the one where the case company operated. Teams A, B and C had reached or exceeded their sales targets in the preceding years, but in 2009 they were behind their targets. Team D was so young, and there had been so many changes before the team was established, that it is difficult to compare the result to the preceding targets. However, it is obvious that they were suffering from the economic crisis as drastically as the other teams.

4.4.2 Job satisfaction

In this research job satisfaction is operationalised by three distinct dimensions of job satisfaction specific to salespeople: the work itself, supervision and company support. Information on job satisfaction was collected by using a five-point Likert scale for each statement with possible responses ranging from 1 “strongly disagree” to 5 “strongly agree”. Each of the three dimensions included four statements. The responses of each interviewee were summed so that inverse statements were given inverse value.

The maximum score of individual teams members would have been 55, and the actual scores varied from 33 to 55 between the team members. All in all, the team members were satisfied with their jobs, even if there was more deviation between individual team members than between teams. The maximum score that the teams could have reached in job satisfaction was 165. The actual scores varied from 125 to 140. The scores of individual members and the total scores of the teams to indicate job satisfaction are described in Table 6 below.

Member/Team	Scores of job satisfaction statements
Member A2	33
Member A3	46
Member A4	46
Team A total	125
Member B2	48
Member B3	51
Member B4	41
Team B total	140
Member C2	39
Member C3	55
Member C4	49
Team C total	143
Member D2	46
Member D3	43
Member D4	46
Team D total	135

Table 6. Scores of the team members' job satisfaction statements

Below in Figure 8 the job satisfaction scores of individual team members are illustrated graphically, and in Figure 9 below the job satisfaction scores of the teams are illustrated in graphics.

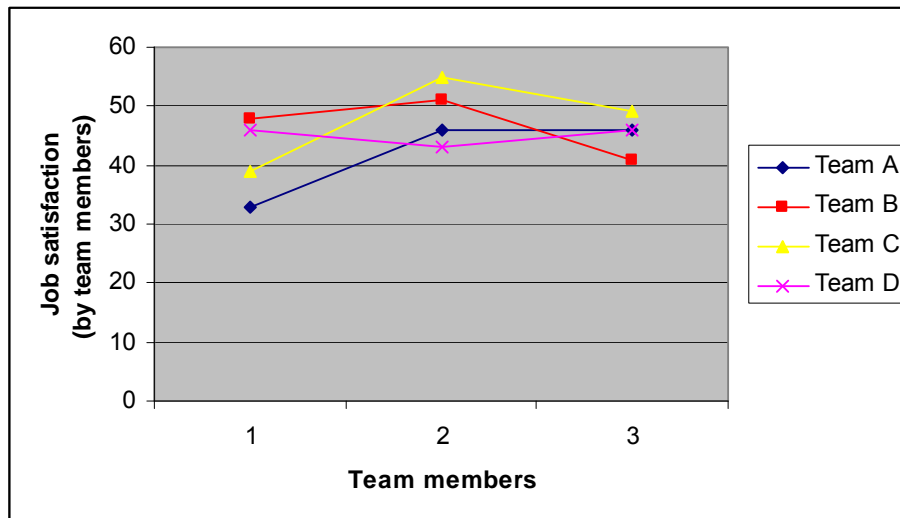


Figure 8. Graphics of the team members' job satisfaction

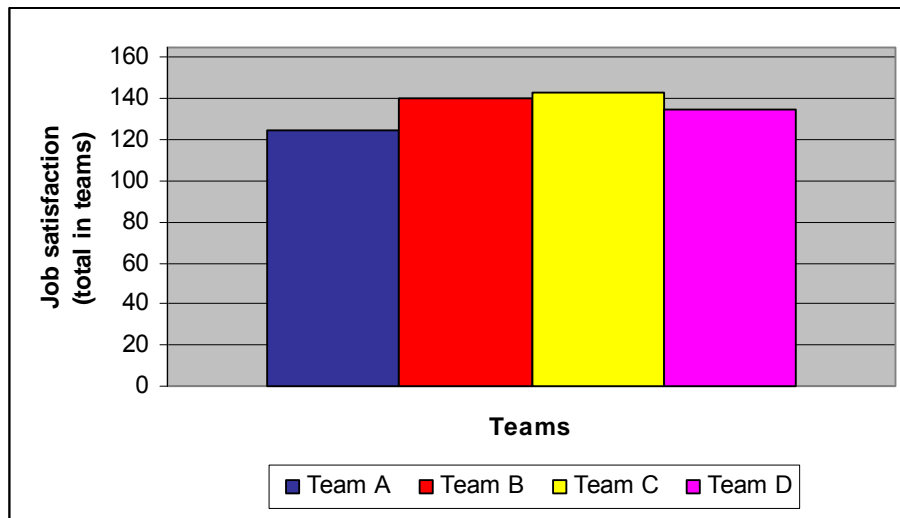


Figure 9. Graphics of the teams' job satisfaction

In terms of job satisfaction there was quite a lot of deviation between the team members in Teams A and C. The most dissatisfied persons were members of Teams A and C, and the most satisfied person was in Team

C. The members of Team D were quite equally satisfied with their jobs. Standard deviations in job satisfaction of the four teams are described in the Table 7 below.

Team	Standard deviation of job satisfaction
Team A	6.13
Team B	4.19
Team C	6.60
Team D	1.41

Table 7. Standard deviations of job satisfaction in the teams

It came out after the interviews that statements regarding company management were understood in two different ways. Some interviewees talked about their unit management, and some interviewees about the company's top management. This may slightly distort the results.

4.5 The relationship between a virtual leader's communication practices and the virtual team's performance

Based on the results it can be said that all teams were rather homogenous in terms of the communication practices, objective performance and attitudinal performance of leaders. However, the objective and attitudinal performances of the teams did not go in hand in hand. Team A was the second highest in objective targets but the lowest in job satisfaction. Team B was second highest in job satisfaction and highest in objective team targets. Team C was highest in job satisfaction but second lowest in objective targets, while Team D was second highest in job satisfaction and lowest in objective targets.

Below in Figure 10 the job satisfaction in teams and targets achieved on the team level are illustrated in the same graphics.

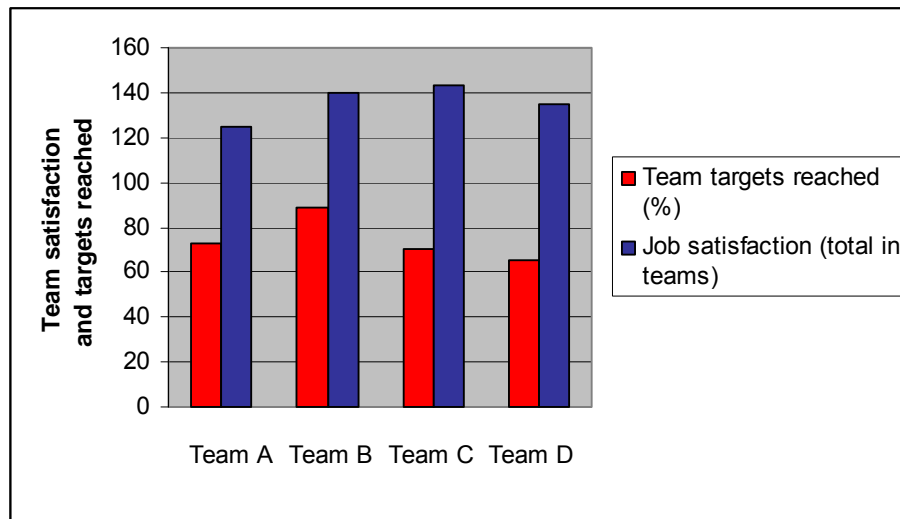


Figure 10. Graphics of the team satisfaction and targets achieved

Obviously the results reflect the management and communication cultures of the company, as well as the economic situation. It is obvious that the teams were suffering from the global economic crisis. It is therefore difficult to draw any direct conclusions on the relationship between the objective targets of the teams and the leaders' communication.

In assessing attitudinal performance, it can be said that turbulence in the company weakened job satisfaction. It is difficult to become motivated if you are not in the same position after 12 months to see the accomplishments. Other issues that weakened job satisfaction were a lack of feedback and feelings of isolation. These could be improved by leaders' communication. Feedback on a regular basis, both positive and constructive, at least on plans and budgets prepared and on general progress, is needed. Additionally, leaders' communication towards team members should be fair and open. Leaders have a central role in activating internal communication within teams by creating communication practices. It can be said that the relationship between leaders' communication practices and attitudinal performance is strong.

In addition to the above mentioned results, many factors that were not studied here affect team performance. These include the work itself, its independency and responsibilities, local market conditions, promotion, pay, benefits, fellow workers, training and career prospects. In this study the dominance of the communication practices of leaders among these factors was not investigated.

5 DISCUSSION AND CONCLUSIONS

In this research I have studied the communication practices of virtual leaders and their relationship with the performance of virtual teams. In this chapter I will provide answers to research questions and discuss the various aspects of my research results in comparison with the earlier literature and how the results could be utilised in theory and practice. I will also discuss the limitations of the study and make some suggestions for future research.

5.1 Theoretical conclusions

In Figure 11 below the key results of my research are presented together with the research framework. Next, I will answer the research questions and discuss the various aspects of my findings compared to the earlier literature.

All three types of messages – direction-giving, affective communication and sense-making – are needed in a leader's communication to make it an integral whole that motivates team members.

Phone and email are the most used communication channels as they are easy to access, can transmit rich information and are part of organisational culture. Phone is superior because it is more personal.

Ability and willingness to listen form the basis for interaction between a leader and a member. It is important to share opinions and think together. This mutual sense-making is the requirement for effective communication. In addition, small talk and the leader's proactive, fair and frequent communication is critical.

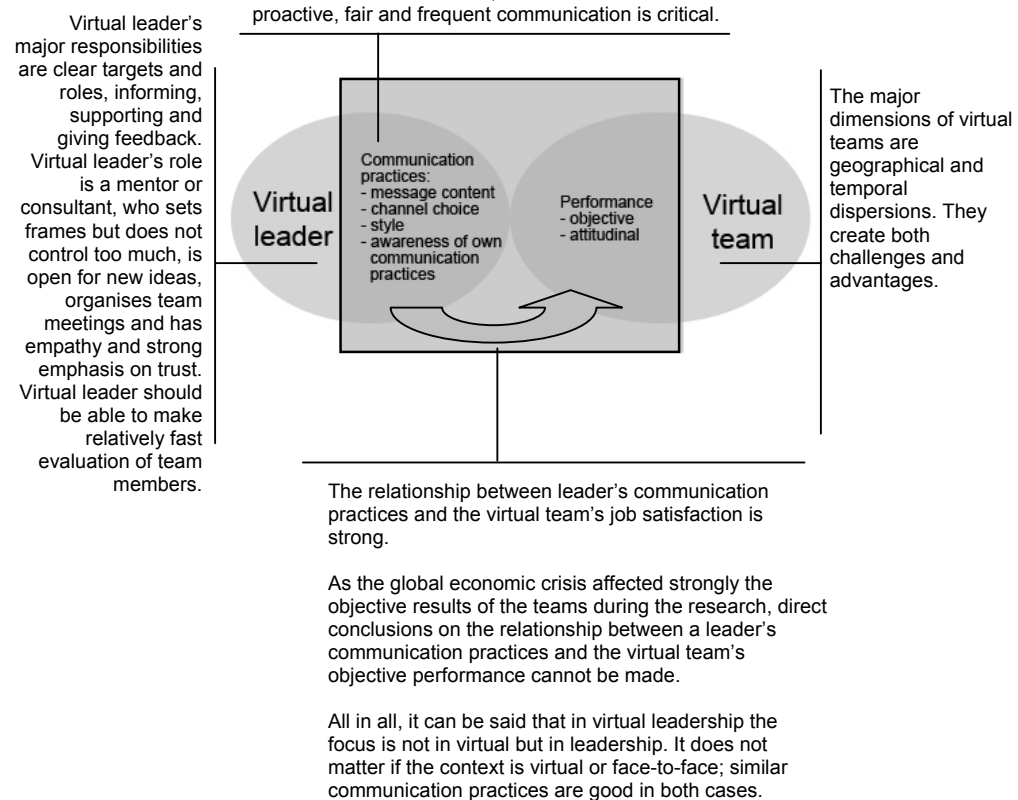


Figure 11. The key results of the research presented together with the research framework

5.1.1 What are the distinctions of a virtual team?

Zigurs (2003, 340) identifies four main dimensions of a virtual team. These are geographical, temporal, cultural and organisational dispersions. The results of this study partly support this definition. Geographical and temporal dispersions were identified as the most critical dimensions,

cultural and organisational dispersions being not so predominant dimensions of the teams studied.

Geographical dispersion was considered the most challenging dimension in the study as long distances make communication critical and face-to-face interaction and informal gatherings rare. The major advantage in geographical dispersion was global coverage 24 hours a day. In addition, geographical dispersion meant smaller offices, where working was usually more productive than in bigger offices because of fewer distractions.

The temporal dimension, or time in general, was regarded as a central issue that was both negative and positive. As Klein & Kleinhanns (2003, 387) state, time difference narrows the possibilities for team interaction. It lengthened the workdays of the interviewees in this study as well, and travelling complicated the situation even more. Leaders were not always able to support and respond within the timeframe that was necessary. As a result, team members need to be able to work independently. On the other hand, in this study time differences were regarded as positive factors as they give more time to think before a response is needed.

Cultural differences were not considered as a challenging dimension of virtual teams in this study. The differences between high- and low-context cultures (Hall & Hall, 1990) were visible but they did not create any major challenges. Cultural differences did exist but they were mostly seen as a positive factor. According to Zigurs (2003, 340) and Vartiainen et al. (2004, 46) various dimensions foster creativity and innovativeness in virtual teams, which was not clearly noticeable in this study. However, cultural differences were considered to create good benchmarking opportunities and opportunities to learn from various experiences and philosophies. In addition, language as a company language, but not as a native language, can create difficulties in understanding the real message and nuances of the discussion. These findings were similar to Robbins's & Judge's (2009, 404) assessments.

5.1.2 *What is leader's role in a virtual team and its performance?*

In their summarising article, Connaughton and Daly (2005, 188) highlight the importance of communicating vision and maintaining team work. Bell and Kozlowski (2002, 15) crystallise the key role of a virtual leader into two primary categories: team development and team performance. The findings of this study were similar.

Defining and communicating clear targets and roles were found to be a major responsibility for leaders. Bell and Kozlowski (2002, 27) have reached similar results. Targets were defined together with team members.

In virtual team literature intra-team co-operation is an essential part of the research focus, whereas in communications literature a dyad between leader and member is emphasised. In this study almost all team members were leaders of their own local teams, and co-operation in those sub-teams was more important for sales success than co-operation in the teams that were studied. The leaders interviewed had mainly dyadic, one-to-one communication with their team members, but more group communication and co-operation were required by team members. Team development was desired by the team members even if they had individual targets and they worked very independently. Collegial support and an exchange of ideas were required. It was considered to be leader's task to organise mutual virtual and face-to-face meetings within the teams. Also Klein & Kleinhanns (2003, 394) conclude that as much of physical interaction is lost in virtual teams, a leader has to make a conscious effort to keep communication flowing between team members on a continuous basis. Face-to-face communication with a team as a whole is really important, even if meetings may be difficult and expensive to arrange. On the other hand, daily face-to-face working conditions were found disruptive. The results support Nardi's and Whittaker's (2002, 83) findings on the negative and positive sides of face-to-face working. The leader has a critical role in activating internal interaction within the team, even if it was felt that every

member of the team has a responsibility to communicate actively. Many of the leaders and members interviewed emphasised that no one should have feelings of isolation. This issue emerged especially concerning team members who work alone in home offices. As Humala (2007, 27) has stated, perhaps the biggest challenge is to create a similar feeling of presence and belonging for all team members, no matter where they are located. Based on the results it can be said that feelings of isolation and a lack of feedback decrease job satisfaction.

In this study the virtual leader's role was seen as that of a mentor or consultant who sets frames but does not control on a too detailed level. He combines team targets to company targets. The virtual leader's role is to be there to inform and support team members, as well as provide feedback. Giving support was strongly emphasised in the interviews, and also the disappointment if a leader was too busy or travelling and could not support when necessary. Based on the findings it is also important that a virtual leader has social competence, empathy and sensibility. Leaders should be able to make relatively fast evaluations of their team members, especially in virtual teams. Sensibility is needed to hear weak signals even when team members are scattered around the world.

Cascio (2000, 88) emphasises that a leader's responsibilities in facilitating performance are eliminating roadblocks and providing resources. These cannot clearly be seen as findings of this study. Maybe they were taken for granted to the extent that no one even mentioned them, or they were not priorities.

Trust was identified as the second major factor in virtual teams. Järvenpää and Leidner (1999) have had similar results in their study, and Connaughton and Daly (2005, 188) also highlight trust building in their article. Trust was named a necessity in the virtual teams of this study. According to Burke et al. (2007, 607-612) trust has been shown to have an effect on communication as an input but also as an outcome, such as job

attitude and efficiency. Trust acts as glue and affects both job satisfaction and performance. All in all, it can be said that regarding the role of trust and its relationship with communication, the findings of this study support the findings of the earlier studies carried out in laboratory or co-located settings. A leader can strongly influence trust by means of the communication atmosphere he creates in the team. Based on the results, trust is created through open, fair and proactive communication. In addition, a long mutual history and the compatibility of personalities support the maintenance of trust.

When conducting the interviews I realised that not all team members were similarly identified with their teams. Some of the team members interviewed were leaders of their own local sub-teams and seemed to be more identified with their own sub-teams than with the teams where they were members. There may be several explanations for this, but a leader's communication can be one explanation. Leaders created more dyadic, one-to-one communication than group interaction and communicated individual targets rather than group or overall targets, which may affect team members' identification. Even if identification was not particularly studied in this research, based on the findings it can be said that leader's communication, and especially the way in which leader communicates one's targets affects one's identification.

5.1.3 What kind of communication practices do virtual leaders have?

In this study the message contents of leaders were investigated based on Sullivan's (1988) motivating language theory, which has earlier been studied in co-located field settings (Sullivan, 1988; Mayfield et al., 1998; Mayfield & Mayfield, 2002; Sharborough et al., 2006). All three types of messages – direction-giving, affective communication and sense-making – are needed in a leader's communication to make it an integral whole that motivates team members. To be able to achieve the full benefit, a leader's communication needs to be a combination of these three main

components. The findings of this study support the earlier results, even though the earlier results have been gained in co-located settings and this study was carried out in virtual settings. Based on the results it seems that informal i.e. affective communication increases individual job satisfaction in virtual environments. This is the case also in co-located settings (Hofner Saphiere, 1996, 227).

Regarding the communication channel choices of leaders, the findings of this study support many of the existing theories and earlier studies. Face-to-face discussions were considered the best channel of communication, as they support informal communication, such as eating and drinking together, and are in that way crucial to relationship building and maintaining. Nardi and Whittaker (2002, 83) have reached exactly the same results: face-to-face discussions are crucial for sustaining social relationships that make distributed work possible. Both Vartiainen et al. (2004, 47) and Sivunen and Valo (2006, 58) in their studies have found that phone and email are still the most commonly used channels in virtual teams. The findings of this study were the same. The reasons for selecting phone and email were explained by rational reasons. Both channels offer an acceptable quality of information exchange with only a little effort to access, which is the approach of access/quality theory by Carlsson and Davis (1998, 337). Email was chosen also because of its accuracy. In addition to rational reasons, the selections can be seen also social. The superiority of phone in this study was explained by its ability to transmit personal communication, expressions and vocal cues, and provide better emotional understanding. This is the basis of social presence theory by Short et al. (1976, 157). This also explains the need of webcams connected to phone calls. In addition, both phone and email can convey such rich information that it clarifies ambiguity, which is also the idea of the media richness theory by Daft and Lengel (1984, 194–195). By phone you can ask immediate questions to clarify unclear details. The reason why instant messaging, for example, was not much used can be explained from symbolic interactionist perspective (Trevino et al. 1990, 73), where the

importance of organisational culture and practices are emphasised. Instant messaging is a new phenomenon in the case company, and partly therefore it has not achieved a foothold in the company's communication practices. Zigurs (2003, 344) states that leaders should be able to use the versatility of different channels to make their presence felt in a positive way. This statement is not supported by the findings of this study. Even if communication channels were used unilaterally, team members were satisfied. They explained the channel choices with similar arguments to those of their leaders.

One focus area of this study was the aspects of a leader's communication style that foster interactivity. Mayfield and Mayfield (2002, 90) and Young and Post (1993, 39 – 41) state that a leader's ability to listen is critical in creating high trust and commitment. The findings of this study were similar. The ability and willingness to listen are essential components of a virtual leader's work. They form the basis for interaction between a leader and a member. It is important that both parties share opinions and think together. This can also be called mutual sense-making, which according to Cramton (2002, 356) is the requirement for effective communication. In the teams studied the communication between leaders and members was typically interactive and informal. It had no agreed schedule or agenda, or if an agenda existed it usually expanded on phone. As Vartiainen et al. (2004, 47) state, informal communication is interactive and information-rich. It has no schedule or agenda. Supporting the findings of Vartiainen et al. (2004, 114) proactiveness, i.e. a leader's active and timely communication, is critical. In virtual teams members may work in small and home offices where informal "coffee break" communication is at a minimum, and therefore the leader's activity is especially important. In addition, team members can be virtual team leaders in their own areas. These kinds of communication chains in virtual environments require active procedures.

Based on the results, leaders' awareness of their own communication is not clear. Communication is mostly done unconsciously, but it seems that

leaders can adjust their communication according to the personality they are communicating with. However, it is not clear how close the leaders' mental images of their own behaviour are to reality.

5.1.4 What is the relationship between a leader's communication practices and the virtual team's performance?

Based on the results of this study it can be said that the relationship between a leader's communication practices and the virtual team's job satisfaction is strong. As the global economic crisis affected strongly the objective results of the teams during the research, direct conclusions on the relationship between the leader's communication practices and virtual team's objective performance cannot be made. However, it can be said that the results support the findings of Pincus (1986, 395) and Mayfield et al. (1998, 235): a leader's communication is strongly related to the team's successful outcomes. It is interesting to see that even if Pincus and Mayfield et. al. have carried out their studies in co-located settings, their findings are similar to the findings of this study which was carried out in virtual environments.

Communication seems to be an essential and critical part of leader's work no matter if he is a virtual or co-located leader. Based on the results it can be said that in virtual leadership the focus is not in virtual but in leadership. It does not matter if the context is virtual or face-to-face; similar communication practices are good in both cases. In virtual context a leader should perhaps pay more attention to discipline in keeping the regular practices.

In assessing attitudinal performance, it can be said that turbulence in the company weakened job satisfaction. It is difficult to become motivated if you are not in the same position after 12 months to see the accomplishments. Other issues that weakened job satisfaction were a lack of feedback and feelings of isolation. These could be improved by leaders'

communication. Feedback on a regular basis, both positive and constructive, at least on plans and budgets prepared and on general progress, is needed. In addition, leaders' communication towards team members should be frequent, fair and open. As both Connaughton and Daly (2005, 188) and Cascio (2000, 87) summarise in their findings, one of a virtual leader's major challenges is to create similar feeling of presence and belonging for all team members to prevent feelings of disconnectedness. Leaders have a central role in activating internal communication within teams by creating communication practices. It can be said that the relationship between leaders' communication practices and attitudinal performance is strong.

In addition to the above mentioned results, many factors that were not studied here affect team performance. Those include, for example, the work itself, its independency and responsibilities, local market conditions, promotion, pay, benefits, fellow workers, training and career prospects (Churchill et al. (1974, 255; Pincus 1986, 396). In this study the role of leaders' communication practices among these factors was not investigated.

5.2 Managerial conclusions

If virtual leaders want to improve the effectiveness of their teams by means of communication, it is worth taking the following guidelines into consideration.

1. Create communication practices and be disciplined

The most effective communication practices depend on the team and its tasks. The best practices are based on team members' expectations and consciously created through mutual discussion. Face-to-face meetings at least two times a year are essential for idea sharing and team coherence. In between the official meetings, time for informal discussions should be reserved to keep team members glued. Regular virtual team meetings, for

example net meetings once per month, keep team members up to date and activate their information exchange. Net meetings are much easier and cheaper to arrange than face-to-face meetings. It can be mutually agreed that net meetings are scheduled so that working outside office hours rotates in the team. Weekly phone calls to each member help in informing, supporting and focusing team members, as well as in identifying possible weak signals. Over-communication without a specific reason is recommended in virtual teams, as otherwise difficult issues may not come into the daylight early enough (Connaughton & Daly, 2005, 204). In creating similar feeling of presence and belonging for team members it is important that leaders have fair and similar communication practices and over-communication with all team members. In some cases it is also important to meet each team member in his/her own local office or area to have development discussions and make sure that the operation is focused towards the agreed targets. It is the leader's responsibility to create communication practices and atmosphere through communication (Klein & Kleinhanns 2003, 394). This requires discipline and prioritising.

2. Communicate clear targets and roles

A leader's most important role in a virtual team is defining and communicating clear targets and roles (Bell & Kozlowski, 2002, 27). Defining targets together with team members is recommended, as this allows local conditions to be taken into consideration better. It also increases commitment. Referring to roles, it is important to avoid overlapping and gaps in responsibilities.

3. Be like a mentor

In virtual teams, team members work independently and may have a lot of responsibility. The leader is considered a mentor who sets and communicates the frames and provides support when needed but does not stick to too detailed issues. Feedback should be communicated on a regular basis, and especially on plans or budgets that team members have been asked to prepare.

4. Foster trust

Trust naturally exists between people if it has not been violated. The leader's responsibility is to foster trust and coherence within the team by means of open and transparent communication. All team members should be treated similarly in communication. Special attention should be paid to members working in home offices. They should not feel that they are left aside.

5. Be proactive and listen

Team members want to hear news from their own leader first. This requires proactive and timely communication from the leader. The leader's ability to listen and mutual sense-making are critical for team effectiveness. Listening skills are a key to empathy, which is especially required from a virtual leader. Listening is different than hearing. Active listening means not only listening but also asking astute questions, being open-minded and understanding, seeking suggestions and avoiding interrupting (Robbins & Hunsaker, 2009, 90). Interactive communication is based on listening. It is important that both parties share opinions and think together. This is called mutual sense-making.

6. Use versatile communication

All three types of messages investigated in this study – direction-giving, affective communication and sense-making – are needed in a virtual leader's communication to make it an integral whole that motivates team members. Direction giving means clarifying tasks, goals and roles, information and advice sharing, direct instructions and requests, problem-solving, and so on. Affective communication means positive and constructive feedback, expressions and acceptance of feelings, small talk and joking. Sense-making means explaining the organisation's culture, environment, structure, norms, rules and values. To be able to achieve the full benefit, the leader's communication needs to be a combination of these three main components (Mayfield et al. 1998, 237).

In addition to practical guidelines for virtual leaders, some issues could be taken care of on the company level to support the communication of virtual leaders.

7. Development of data connections and communication tools

What seems to frustrate members working in virtual teams most are data communication connections and technical problems. Before investing money in developing new communication tools, connections should be made as fast and trouble-free as reasonably possible. As virtual working is becoming more and more general, communication tools should be developed further. Data connections and proper tools are a prerequisite for making virtual work possible, not to talk about effectiveness. In every organisation there is a need for a discussion forum or collaboration desktop where up-to-date documents and discussions are available, managed and stored. Especially in high-context cultures and more complex communication situations, it is essential to see nonverbal and subtle situational cues, such as facial expressions and body language (Hall & Hall, 1990, 6–7). Therefore, possibilities to use webcams in phone discussions and videoconferencing to replace net meetings should be offered. Additionally, virtual networking has increased drastically in private life during the past few years. So called digi-natives, the generation which will enter working life shortly, are not used to email but networking platforms and virtual societies in communication. Communication tools in workplaces should be developed to offer them decent ways of communicating.

8. Recruiting employees to virtual teams

Members of virtual teams often need to work independently. This should be taken into consideration already when recruiting employees to virtual teams. Language skills and experience in working in international environments are prerequisites. A young and inexperienced person should not be recruited to work alone in a home office as it requires multiple skills

and lot of responsibility. As it is difficult to train a new employee in virtual settings, a decent back-up system is needed. Leaders of virtual teams should have sensibility, good social competence and the ability to make rather quick and correct assumptions about other people.

9. Training for virtual team members

Many of the virtual team members would like to have communications training and answers to the following questions: How often to communicate? What to communicate? Which practices are recommended? What tools are available? How to use them? Especially virtual leaders would like to have coaching on creating communication practices. What is most effective, what works in our team, what should be changed, how to be more aware of own communication, how to utilise tools best, which kind of practices should be created, how to use different tools – for example these kinds of questions could be answered by training. As virtual working is rather a new phenomenon, it has not been taught at school, and often within organisations leaders are left quite alone to deal with virtual communication challenges.

5.3 Reliability and validity

The quality of data, its validity and reliability, is traditionally analysed in quantitative research to evaluate the usefulness of research results. Some scholars (see e.g. Lincoln & Guba, 1985 and Patton, 2002) claim that instead of assessing validity and reliability in qualitative research, the trustworthiness of the results should be assessed with criteria such as credibility, transferability and dependability. They are more interested in understanding certain cases thoroughly within a specific context than in hypothesising about generalisations and causalities (Patton, 2002, 546). However, according to Hirsjärvi et al. (2004, 217) and Stenbacka (2001, 551) the validity and reliability of results should somehow be assessed in qualitative research, too. In this chapter the validity and reliability of this study are discussed.

5.3.1 Validity

Yin (2009, 40) states that three different tests are commonly used in social research to evaluate the validity of a case study. These are construct validity, internal validity and external validity.

Construct validity means that the correct operational measures are identified for the concepts being studied. There are three different tactics available to increase construct validity: 1) to use multiple sources of evidence during data collection, which is called triangulation, 2) to establish a chain of evidence and 3) to have the case study report reviewed by key informants before finalising it (Yin, 2009, 41-42).

According to Patton (2002, 556) triangulation can also mean using multiple theories or perspectives in data interpretation. In this study theoretical triangulation has been used to some extent. The perspectives of the virtual team and virtual leadership, as well as communication theories, are included. The construct validity of this study is further increased by interviewing several informants, both leaders and members, from each team. In addition, a few key informants have reviewed the draft for possible misunderstandings.

Internal validity means seeking to establish a causal relationship when conditions are believed to lead to other conditions (Yin, 2009, 42-43). In this study finding causalities is not the priority, as the aim is to understand the interactions and give perspectives rather than exquisite truth. However, some causal claims are made, so the internal validity of the study should be moderate. Lincoln and Guba (1985, 219) suggest that credibility better fits with naturalistic epistemology than internal validity and present several ways of improving credibility. The most important ways in this study are persistent observation and triangulation (Lincoln & Guba, 1985, 301- 316.) As an employee of the case company I know the research context of the case well and could create trust with interviewees. According to Lincoln

and Guba (1985, 304) credibility can weaken if a researcher is too merged with the group to be researched. In this case this was avoided by selecting interviewees who did not have personal relationships with me beforehand.

External validity means defining a domain to which the findings of the study can be generalised (Yin, 2009, 43-44). Theories tested with one case should be replicated to other cases in order to find out if similar results occur. The aim of this study was not to test any existing theory but to explore how the theories describe and explain the communication of virtual leaders. This study included only one case company, so it is highly localised. The organisation culture of the company strongly affects the results. Therefore, the conclusions describe the situation in question well, but at a later time or in another case they may account for rather little validity. On the other hand, there are obviously cases with similar sales targeted teams and with similar challenges regarding virtual leaders' communication around the world. In this sense this case can be seen as a representative case. Because of the newness of the topic, this study provides insights to future empirical research and theory building.

5.3.2 Reliability

Reliability means that it is demonstrated how the operations of a study, such as the data collection procedures, are carried out so that they can be repeated with the same results (Yin, 2009, 40). Koskinen et al. (2005, 159) state that it also means maintaining the chain of reasoning so that a reader can follow the researcher's thinking. Patton (2002, 546) speaks about dependability as an analog to reliability when a systematic process is systematically followed. According to Eskola and Suoranta (2008, 208-210) the basis in qualitative research is the researcher's subjectivity and admitting that the researcher is a central tool in his research. In this report the methods, procedures and the whole research process are carefully documented to improve the reliability of the study. In this report claims about the reality outside the research material are not presented. The

observations and interpretations made are based on the interview material of this study only. Verbatim are used in the report to demonstrate critical pieces of supporting and challenging evidence on which interpretations and conclusions are based.

As the case company is my employer there is a risk that I would integrate too deeply with the teams I have studied, and consequently some special issues in the environment could become normal and be left without noticing. To avoid this, the teams were selected so that they are not related to my own work but represent different functions of the company. In addition, I do not have close relationships with the interviewees from the past. Participation in this study was completely voluntary, and anonymity was guaranteed to the interviewees. However, it is possible that the interviewees' awareness of being the objects in the study may have affected their answers.

5.4 Limitations and suggestions for future research

When assessing the results of this research, it is worth noticing the analysis level of the study. The units of analysis are teams and individuals working in sales responsible teams. The teams and individuals are comparable with each other but they do not represent the culture of one company in average. Teams related to different tasks than sales, such as R&D, engineering, purchasing and manufacturing, would perhaps be led differently, which could affect the communication behaviour of their leaders. In the teams of this study, members had individual targets, and they all worked independently. They were mostly led one-to-one. Teams with, for example, mutual development tasks would perhaps be led more as a team. In addition, the case company represents only the machine building industry, which is worth taking into account when generalising the results.

It is also worth remembering that even though the case company operates internationally, it is headquartered in Finland, which may affect the organisational and management culture of the company, as well as its employees' conceptions of good communication. If the material was extended with interviews in companies headquartered on different continents it could have led to different results. The material could be also extended by increasing the number of case companies, participating teams and individuals and thus, increase the contribution of the study.

Members of virtual teams work in environments where travelling, mobile work and the amount of communications technology have increased. As the environment is challenging, it is essential that virtual teams are researched in authentic environments and in real organisational settings. However, most of the earlier studies on communication in virtual teams or leaders' communication have been carried out in laboratory settings by using temporary teams that have been set up for research purposes only (see e.g. Hambley et al., 2006; Järvenpää et al., 1998; Järvenpää & Leidner, 1999, Potter & Balthazard, 2002; Suchan & Hayzak, 2001). The members of these kinds of teams do not necessarily know each other or have a mutual history or experience in virtual work, and their operations do not have the same meaning as real working teams do. Communication and its consequences are so challenging and different in real working life that in laboratory settings it is difficult to reach the same level. Future research into virtual team communication in a real business context would be beneficial to both researchers and practitioners.

In the interviews of this study, trust was named as a necessity and the key component of working in virtual teams. However, trust is not within the research framework of the study and was therefore not thoroughly analysed here. The relationship between communication practices and trust in global virtual teams has been studied by Järvenpää and Leidner in 1999 but in laboratory settings only. Further research is encouraged to continue to investigate what kinds of communication behaviours by virtual

leaders facilitate trust and what is the role of swift trust in intra-organisational virtual teams in authentic environments.

Prior to this study the motivating language theory (Sullivan 1988) has been studied in co-located settings only (Mayfield et. al, 1998; Mayfield & Mayfield, 2002; Sharbrough et al., 2006). As this study indicated that the theory has the potential to mediate virtual challenges, it is encouraged to continue research into the motivating language theory in virtual environments.

As this study showed similar communication practices of leaders can be considered as good no matter if the context is virtual or co-located. Therefore the future research is suggested to focus on sense-making and direction-giving communication as well as communication practices which foster trust rather than on selection of various research channels.

Both this study and some earlier studies (see e.g. Vartiainen et al., 2004; Sivunen and Valo, 2006, 58) have showed that communications channels are used unilaterally in virtual teams. Phone and email dominate the choices. It is worth studying how alternative communication channels could complement or replace phone and email. More and more Web 2.0-based communication tools enabling virtual networking are become available, but the research into this respect is still scarce.

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APPENDIX 1: TABLE OF KEY CONCEPTS, THEIR DIMENSIONS, INTERVIEW QUESTIONS AND THEIR LINKAGE TO RESEARCH QUESTIONS

Key concepts of the study	Dimensions of concepts	Frame for interview questions	Linkage to research questions
Virtual team	<p>Team dispersion:</p> <ul style="list-style-type: none"> - team members are in different time zones - team members have different local environments - team members have different nationalities, languages and cultures - team members have various professional and organizational backgrounds and different conceptions of good leadership and communication 	<p>What kind of challenges/advantages team dispersion create for team's operation/ leader communication in your team?</p>	<p>What are the distinctions of a virtual team?</p>
Virtual leader	<p>Performance management (objective targets such as sales, order intake and profitability)</p>	<p>What kind of challenges does the virtuality create for leading team's performance?</p> <p>How does the leader in your team support performance management?</p>	<p>What is leader's role in a virtual team and its performance?</p>
	<p>Team development (team cohesion, idea sharing, strengthening of relationships, create feeling of presence)</p>	<p>What kind of challenges does the virtuality create for team development?</p> <p>How does the leader in your team support team development?</p>	
Leader's communication practices	<p>Content</p> <ul style="list-style-type: none"> - direction giving: clarification of tasks, goals and roles, information and advice sharing, idea construction, direct instructions and requests, problem-solving (matters), conflict resolution (people) - affective messages: positive/constructive feedback, expressing/accepting feelings, personal compliments and issues, small talk and joking - sense-making: explaining of organization's culture, environment, structure, norms, rules and values 	<p>If you think about your leader's communication is it only direction giving or affective or meaning making or some kind of combination of these?</p>	<p>What kind of communication practices do virtual leaders have?</p>
	<p>Channel</p> <p>(face-to-face discussion, face-to-face meeting with several attendees, phone/cell phone discussion, email, instant messaging, web-meeting with two or more attendees and web-conferencing)</p>	<p>In your case what channels are mostly used in leader communication for direction giving? Can you say why this (/these) channel(s) is (/are) chosen?</p> <p>In your case what channels are mostly used in leader communication for affective communication? Can you say why (/these) channel(s) is (/are) chosen?</p> <p>In your case what channels are mostly used in leader communication for sense-making? Can you say why (/these) channel(s) is (/are) chosen?</p>	

	<p>Style</p> <ul style="list-style-type: none"> - proactive: leader communicates actively and shares information so that team members do not need to ask for it. It is often question about timeliness as well. - interactive: create discussion where both sides are actively involved - ability and willingness to listen 	<p>In what kind of matters your team leader's communication is proactive?</p> <p>In what kind of matters your leader's communication is interactive?</p> <p>Based on your experience, does your team leader have the ability and willingness to listen?</p>	
	Awareness of own communication practices	<p>TO BE ASKED FROM LEADERS ONLY</p> <p>Are you aware of your own communication practices (meaning do you consider what, via which channel and how you communicate)?</p> <p>How carefully do you plan your communication e.g. by considering with whom you are communicating?</p> <p>TO BE ASKED FROM MEMBERS ONLY</p> <p>Do you think your team leader is aware of his/her own communication practices?</p>	
	Development ideas	<p>What are the most important communication skills of a virtual leader in your opinion?</p> <p>In your opinion what kind of leader's communication practices best support team performance and development?</p> <p>Do you have ideas what kind of tools or support virtual leader needs for his communication practices?</p>	
Team performance	Objective	<p>TO BE ASKED FROM LEADERS ONLY</p> <p>Order intake/sales target (actual vs budgeted in%)</p> <p>One team specific target (actual vs budgeted in%)</p>	What is leader's role in a virtual team and its performance?
	Attitudinal (job satisfaction)	<p>TO BE ASKED FROM MEMBERS ONLY</p> <p><i>Strongly disagree 1 2 3 4 5 Strongly agree</i></p> <p><i>Work itself:</i></p> <ul style="list-style-type: none"> - My work is challenging. - My job is often dull and monotonous. - My work gives me a sense of accomplishment. - My job is not exciting. <p><i>Supervision</i></p> <ul style="list-style-type: none"> - My superior is tactful. - My superior is interested in my ideas. - My superior is not particularly interested in my work problems. - My superior supports me when I need it. <p><i>Company support</i></p> <ul style="list-style-type: none"> - Sometimes when I learn about management's plans I wonder if they know the territory at all. 	

		<ul style="list-style-type: none">- I'm allowed to work independently but I get support from the management when I need it.- In my opinion the training that the company organizes is not well planned.- I feel I get empowerment from the management.	
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APPENDIX 2: FRAMEWORK FOR THEME INTERVIEWS OF MEMBERS (ENGLISH)

Frame for interview questions

Supporting explanations of terms

Background information

Are you a leader or a member of the team in question?

Are you located in the same location as your team leader and other team members?

How long have you been part of this team?

Where are you located?

What is your native language?

Virtual team

What kind of challenges does team dispersion create for your team's operation and communication?

What kind of advantages does team dispersion create for your team's operation and communication?

Team dispersion means:

*- team members are in different time zones
- team members have different local environments*

- team members have different nationalities, languages and cultures

- team members have various professional and organizational backgrounds and different conceptions of good leadership and communication

Virtual leader's role

What kind of challenges does team dispersion create for leading team's performance?

How does the leader in your team support achieving of objectives?

What kind of challenges does the virtuality create for team development?

How does the leader in your team support team development?

Performance management means:

management of objectives such as sales, order intake and profitability

Team development means:

idea sharing, strengthening of relationships, creating feeling of presence

Communication – message content

If you think about your leader's communication is it direction giving?

Direction giving means: clarification of tasks, goals and roles, information and advice sharing, idea construction, direct instructions and requests, problem-solving (matters), conflict resolution (people)

Is it affective communication?

Affective (emotional) messages means: positive/constructive feedback, expressing/accepting feelings, personal compliments and issues, small talk and joking

Is it sense-making?

Sense-making means: explaining of organization's culture, environment, structure, norms, rules and values by e.g. telling stories of them.

Communication – channel choice

In your case what channels are mostly used in leader communication for direction giving?

Can you say why this (/these) channel(s) is (/are) chosen?

Channels are eg: face-to-face discussion, face-to-face meeting with several attendees, phone/cell phone discussion, email, instant messaging, web-meeting with two or more attendees and web-conferencing

In your case what channels are mostly used in leader communication for affective communication?

Can you say why (/these) channel(s) is (/are) chosen?

In your case what channels are mostly used in leader communication for sense-making?

Can you say why (/these) channel(s) is (/are) chosen?

Communication - style

In what kind of matters (e.g. future changes, positive feedback, objectives of the team) your team leader's communication is proactive?

Proactive: leader communicates actively and shares information before team members ask for it. It is often question about timeliness as well.

In what kind of matters your leader's communication is interactive?

Interactive: leader creates discussion where both sides are actively involved

Based on your experience, does your team leader have the ability and willingness to listen?

Communication - awareness

Do you think that your team leader is aware of his/her own communication practices?

Awareness here means that a leader considers with what kind of person he is communicating and consciously chooses what, how and via which channel he communicates.

Job satisfaction

Please use the following scale to indicate the extent to which the statements correspond to your opinion.

	1	2	3	4	5		
	<i>Strongly disagree</i>	<i>Slightly disagree</i>	<i>Neither agree nor disagree</i>	<i>Slightly agree</i>	<i>Strongly agree</i>		
			Strongly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Strongly agree
My work is challenging.	1	2	3	4	5		
My job is often dull and monotonous.	1	2	3	4	5		
My work gives me a sense of accomplishment.	1	2	3	4	5		
My job is not exciting.	1	2	3	4	5		
My leader is tactful.	1	2	3	4	5		
My leader is interested in my ideas.	1	2	3	4	5		
My leader is not particularly interested in my work problems.	1	2	3	4	5		
My leader supports me when I need it.	1	2	3	4	5		
Sometimes when I learn about management's plans I wonder if they know the territory at all.	1	2	3	4	5		
I'm empowered to do my work.	1	2	3	4	5		
I get support from the management when I need it.	1	2	3	4	5		

Development ideas

What are the most important communication skills of a virtual leader in your opinion?

Virtual leader is a nominated leader of a team which is dispersed i.e. team members are located in different locations and they rarely meet face-to face.

In your opinion how virtual leader could best support team's performance?

In your opinion how virtual leader could best support team's development?

Do you have ideas what kind of tools or support virtual leader would need in his communication?

Anything else you would like to say?

APPENDIX 3: FRAMEWORK FOR THEME INTERVIEWS OF LEADERS (ENGLISH)

Frame for interview questions

Supporting explanations of terms

Background information

Are you a leader or a member of the team in question?

Are you located in the same location as your team members?

How long have you been part of this team?

Where are you located?

What is your native language?

Virtual team

What kind of challenges does team dispersion create for your team's operation and communication?

What kind of advantages does team dispersion create for your team's operation and communication?

Team dispersion means:

- team members are in different time zones

- team members have different local environments

- team members have different nationalities, languages and cultures

- team members have various professional and organizational backgrounds and different conceptions of good leadership and communication

Virtual leader's role

What kind of challenges does team dispersion create for leading team's performance?

How do you as a leader support achieving of objectives in your team?

What kind of challenges does team dispersion create for team development?

How do you as a leader support team development in your team?

Performance management means: management of objectives such as sales, order intake and profitability

Team development means: idea sharing, strengthening of relationships, creating feeling of presence

Communication – message content

If you think about your communication towards your team members is it direction giving?

Direction giving means: clarification of tasks, goals and roles, information and advice sharing, idea construction, direct instructions and requests, problem-solving (matters), conflict resolution (people)

Is it affective communication?

Affective (emotional) messages means: positive/constructive feedback, expressing/accepting feelings, personal compliments and issues, small talk and joking

Is it sense-making?

Sense-making means: explaining of organization's culture, environment, structure, norms, rules and values by e.g. telling stories of them

Communication – channel choice

In your case what channels are mostly used in leader communication for direction giving?

Can you say why this (/these) channel(s) is (/are) chosen?

Channels are e.g.: face-to-face discussion, face-to-face meeting with several attendees, phone/cell phone discussion, email, instant messaging, web-meeting with two or more attendees and web-conferencing

In your case what channels are mostly used in leader communication for affective communication?

Can you say why (/these) channel(s) is (/are) chosen?

In your case what channels are mostly used in leader communication for sense-making?

Can you say why (/these) channel(s) is (/are) chosen?

Communication - style

In what kind of matters (e.g. future changes, positive feedback, objectives of the team) your communication towards your team members is proactive?

Proactive: leader communicates actively and shares information before team members ask for it. It is often question about timeliness as well.

In what kind of matters your communication with your team members is interactive?

Interactive: leader creates discussion where both sides are actively involved

Do you think that you have the ability and willingness to listen your team members?

Communication - awareness

Are you aware of your own communication practices?

Awareness here means that a leader considers with what kind of person he is communicating and consciously chooses what, how and via which channel he communicates.

How carefully do you plan your communication e.g. by considering with whom you are communicating?

Team performance

Please specify how many percentages of your team's order intake/sales target you have reached this year (i.e. actual vs budgeted in %).

Please specify one other main target of your team you have set for this year (e.g. profitability) and specify how many percentages you have reached (i.e. actual vs budgeted in %).

Development ideas

What are the most important communication skills of a virtual leader in your opinion?

In your opinion how virtual leader could best support team's performance?

In your opinion how virtual leader could best support team's development?

Do you have ideas what kind of tools or support virtual leader would need in his communication?

Anything else you would like to say?

Virtual leader is a nominated leader of a team which is dispersed i.e. team members are located in different locations and they rarely meet face-to face.