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VIRTUAL TEAMS:
CONSIDERATIONS, ADVANTAGES AND DISADVANTAGES

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ABSTRACT

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Globalization and evolving development in information technology have reshaped how organizations conduct their daily day operations and businesses. Significant amount of human interactions are nowadays handled via different virtual communication channels. Entire projects and work tasks are increasingly done within virtual teams, and solely through different virtual channels with little physical presence. Hence, objective of this research is to investigate what are the considerations, advantages and disadvantages linked to virtual teams.

Research followed the qualitative research methods. Data was collected through interviews and findings were reflected to existing literature. Interviewees were all working in virtual teams which operated in financial industry and were situated in Nordic countries.

Findings show that main advantages of virtual teams are flexibility, access to larger talent pools and networks, gaining local expertise, reduction of travel time and costs. Disadvantages show risk of misinterpretations, challenging to build trust and team feeling, lack of transparency and information sharing. Considerations related to communication methods and tools, best practices such as regular team meetings, people and communication skills, but also trust was considered to be more critical in virtual team than in traditional team.

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Globalisaatio sekä jatkuvasti kehittyvä informaatioteknologia ovat muovanneet organisaatioiden päivittäisiä operaatioita sekä liiketoimintaa. Suuri osa ihmisten välisistä kanssakäymisistä tapahtuu nykyään erilaisten virtuaalisten kommunikaatiokanavien kautta. Yhä enemmän työtä suoritetaan virtuaalitiimien toimesta. Kokonaisia projekteja, sekä työtehtäviä voidaan suorittaa täysin virtuaalikanavia käyttämällä ilman fyysistä kanssakäymistä. Tutkimuksen tavoite on tutkia mitä näkökulmia, hyötyjä, sekä haittoja virtuaalitiimeihin liittyy.

Tutkimuksessa käytettiin kvalitatiivisia tutkimusmetodeja. Data kerättiin haastatteluiden avulla ja niiden löydöksiä peilattiin olemassa olevaan kirjallisuuteen. Haastateltavat työskentelivät kaikki virtuaalitiimeissä, jotka operoivat rahoitusalalla, sekä olivat sijoittuneet Pohjoismaihin.

Löydökset näyttävät että suurimmat hyödyt virtuaalitiimeissä ovat joustavuus, kattavampi osaajaverkosto ja kontaktiverkosto, paikallisen tietotaidon saatavuus, matkustamisen ja kustannusten vähentyminen. Haittoina nähtiin väärinymmärrysten riski, luottamuksen ja ryhmätunteen rakentamisen vaikeus, läpinäkyvyyden sekä tiedon jakamisen puute. Näkökohdat liittyivät kommunikaatiometodeihin ja työkaluihin, hyviin käytäntöihin kuten säännölliset tiimitapaamiset, vuorovaikutus- ja kommunikaatiotaidot, mutta myös luottamuksen tärkeys, mikä nähtiin kriittisempänä virtuaalitiimeissä kuin tavanomaisissa tiimeissä.

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Thank you.

Sincerely,
Matti Törmänen

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1 INTRODUCTION

This chapter introduces the study by providing its background and drivers. Research questions are both presented and explained with the objective of the study. Thereafter scope, limitation and organisation are introduced.

1.1 Background of the study

The ongoing triumph of development in computer and communication technology combined with increasing globalization changes the world continuously. The evolving development in information technology have reshaped how organizations conduct their daily day operations and businesses (Zigurs, 2003). Significant amount of human interactions are nowadays handled via different virtual communication channels. Entire projects and work tasks may be handled solely through different virtual channels with little physical presence (Avolio et al., 2003).

As mentioned, one of the main driving forces being the increasing globalisation means that team members, customers and suppliers are often dispersed and extended around the globe, while having interaction mainly via digital channels (Zaccaro et al. 2003). Thus the combination of increasing globalization and wider availability of computer-mediated communication have increased the use of virtual teams (Penarroja et al., 2015; Cramton et al., 2005).

Increasing use of virtual channels and globalization sets different types of challenges but also opportunities for organizations, therefore they need to cope and utilize the existing reality. Hence this study will investigate the above described phenomena around virtual teams. More precisely, investigating virtual teams with objective to explore what considerations, advantages and disadvantages are related to them.

1.2 Research questions and objective of the study

Table 1. Research Questions.

Research questions			
Main Research Question	**Sub-Research Question 1**	**Sub-Research Question 2**	**Sub-Research Question 3**
What are the considerations, advantages and disadvantages of virtual teams?	What are the best practices and tools used in virtual teams?	Which capabilities and skills support work in virtual teams?	What is the role of trust, and how can it be facilitated in virtual teams?

Main research question is to explore the considerations, advantages and disadvantages of virtual teams. Considerations in this context can be understood as in wider scope of matters that do not directly go under advantages or disadvantages. Therefore sub-research questions support finding the answers to considerations but also for advantages and disadvantages. Considerations in this context refer to a question on how should virtual team member consider adjusting his/hers actions and behaviour in order to work efficiently and effectively meaning best practices, tools, capabilities, skills but also trust.

Hence, main research question is followed with sub-research question: what are the best practices and tools used in virtual teams? There is a need to have good practices and tools in place to initiate effective work in efficient manner. Knowing only advantages and disadvantages may not be solely sufficient, as one should know in which way advantages could be further utilized, and vice versa disadvantages and challenges avoided.

Even though when it is known what to do, there is also a need to know how to do. Therefore appropriate capabilities and skills needs to be in place. Members ought to understand how to conduct best practices by using selected tools or methods, in addition when and via which channel to use. Hence second sub-research question is: which capabilities and skills support work in virtual teams?

Last but certainly not least, third sub-research question is: what is the role of trust, and how can it be facilitated in virtual teams? When looking back at the previous research questions,

trust related question may seem at first a bit stand-alone. However, when reviewing literature, trust keeps continuously showing up. It can be seen as one of the most important factors for effective and well-functioning team regardless of being either virtual or traditional (see in example Järvenpää et al., 1998; Solomon, 2001; Blomqvist et al., 2001; Henttonen et al., 2005). It is the lubricant for team's interactions, which makes the team function and keeps the mental infrastructure stable and solid. Question of trust simply cannot be bypassed. It both relates and is part of the considerations of virtual teams.

1.3 Scope and limitations

This study focuses mainly on the virtual teams and primarily on their considerations, advantages and disadvantages. Traditional teams, also described as conventional teams are left outside of the main research scope. However, traditional teams are included in some extent in example when conducting comparison between virtual and traditional teams but they are not driving the weight-point. Theoretical framework is consisted from various respective journals and sources where different research results are derived from around the field.

Moreover when it comes to research scope of this study, it is being limited to financial industry and mainly operates in Nordic countries. Still persons who were interviewed do have experiences around the world and those are taken into the analysis when deemed relevant. Advantages and disadvantages are in a level that allows generalization to certain extent. Yet each team may have their unique features that need to be taken into account, and some rules and practices may only apply to those certain teams that needs to be acknowledged. This comes from the idea that people are unique and different and teams are built out of individuals. So even if there are some extremely good and commonly identified practices, those may not always be applicable for all individual teams under their given circumstances, which could be considered as one of the limitations. Therefore in this research the focus point of theoretical framework is on the most commonly known aspects, which are reflected to the findings. Thereafter the aim is to generalize different phenomena, and investigate outcomes that seems to apply for majority of the teams. Thus level of generalization can be seen also as a limitation.

As with the perspective of this study, no strict stance towards neither leader nor regular team member will be taken. Perspective is mainly focusing on the general aspects which could be

applied and acknowledged regardless of the formal organisational position. However, some leader and team-member specific literature will be reviewed and introduced. Leadership skills are needed in many areas of life, regardless whether one have formal leadership status or no, therefore those are applicable for all (Alahuhta, 2015, 17). Yet, the findings and results do not take strict stance on the organisational position, as that is not required when reflecting back to research questions and the objective of this study.

1.4 Organization of the study

Hirsjärvi et al., (2007, 244) explains that the majority of the research studies follows so called three point structure. First part prepares the reader for the coming study and contains cover, abstract, table of content with possible abbreviations, list of tables with appendices list. Second part which is the frame, contains actual content meaning introduction, methods, results and discussion with conclusions. Third, final part contains appendices and possible topic or person list. Organisation and structure of this study follows the above recommendations and norms.

This paper has seven main chapters:

1) Introduction
2) Virtual Teams
3) Virtual Team practices and tools
4) Trust
5) Research methods and data
6) Findings
7) Discussion and conclusions

Firstly reader is introduced to the topic and presented with the research questions and objectives. Theoretical framework then provides insight to the previous studies conducted around virtual teams or other relevant fields, and thereby ensures the needed level of understanding. It is vital as the theoretical framework allows in the later stages appropriate discussion between the results and previous studies with reflections. It starts by introducing virtual teams with their dimensions and forms. Thereafter different advantages and

disadvantages are presented from the literature, which continues to other considerations with perspective on best practices, tools and trust.

After reviewing literature in theoretical framework comes the presentation of research methods and data chapter. Objective of this chapter is to describe the selected methods and discuss those with reflections towards research method literature. Also objective is to give fair picture of the benefits but also limitations of selected methods. Chapter contains detailed description of the data collection method, and describes details of interviews and interviewees. Analysis of the data and the process of making conclusions and findings are also presented in this chapter.

Sixth chapter presents the findings from the collected data. All of the findings are categorised accordingly to research framework. Findings are presented in a structured manner and contains example quotes from the interview data. Under each sub-chapter there are tables in which findings are summarised and listed.

Seventh and the last chapter, discussions and conclusions, reflects the findings towards theories and discuss their connections. Managerial conclusions are also provided which aims to give recommendations based on the theory and findings. Finally limitations of the study are discussed and evaluated, with future research recommendations.

1.5 Theoretical Framework

As for theoretical framework, the context of the study entails considerations, advantages, disadvantages, practices, skills, tools and trust. Those are all interrelated and reflected to the research questions explained earlier. Again, considerations are considered as a practices, skills, tools and trust around virtual teams. Based on those considerations are then evaluated and picture of advantages and disadvantages are created around the literature. However, advantages and disadvantages described are also related to considerations in a sense that one should acknowledge the opportunities and challenges as such when being part of virtual team. Below figure 1 illustrates the interconnection of the themes around theoretical framework.

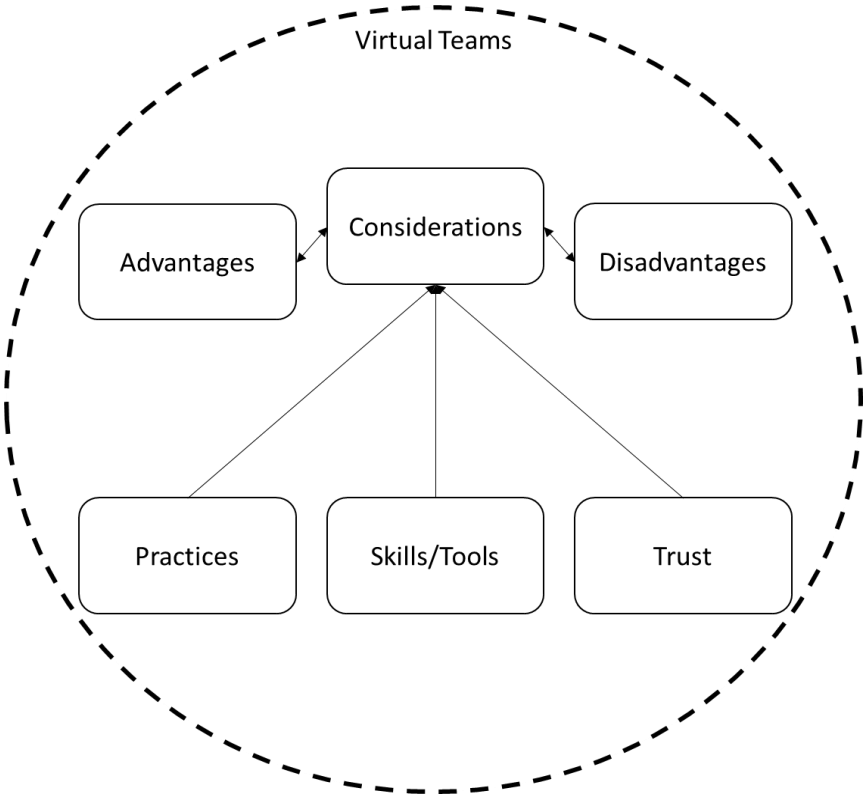

Figure 1. Theoretical framework.

2 VIRTUAL TEAMS

Following chapter presents the different definitions of virtual teams from existing literature and explains how different dimensions could be viewed. Advantages and disadvantages from literature are also further explained.

2.1 Different dimensions and forms of virtual teams

There is no single universal definition for *virtual team,* nor there is explicit threshold when a traditional team turns out to be *virtual*. As virtuality comes with different dimensions, it can be said that teams are either more virtual or less virtual, closer or distinct to traditional ones. Zigurs (2003) presented different dimensions for level of team's virtuality, and described virtual teams as "*collection of individuals who are geographically and/or organizationally or otherwise dispersed and who collaborate via communication and information technologies in order to accomplish a specific goal"*. Supporting the previous definition, Zaccaro and Bader (2003) described virtual teams have two distinctive features:

1. "*Teams either work in geographically separated work places, or they may work in the same space but at different times"*
2. "*Most, if not all, interactions among team member occur through electronic communication channels"*.

Furthermore, there are different dimensions for virtual teams, which Zigurs (2003) have presented:

- Geographic dispersion
- Temporal dispersion
- Cultural dispersion
- Organizational dispersion

These dimension are illustrated in the figure 2. The centre of the circle in figure 2 is traditional team's position, whereas when moving to outer skirts of the circle team's virtuality increases.

More dimensions the team is dispersed with, more virtual it is, and more complex the possible challenges become. There could be several more dimensions, however, these can be considered the most common ones.

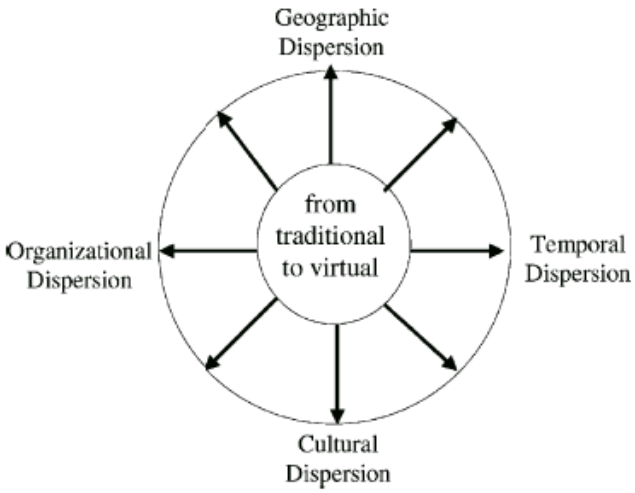

Figure 2. Virtual team dimensions (Zigurs, I. 2003)

Zigurs (2003) continued that in many cases complexity increases when people often work both in traditional teams within their locations, and simultaneously virtually towards other teams at different levels and locations. Cascio et al., (2003) illustrated this with mapping four different forms of virtual teams in matrix (see figure 3), where virtual teams were classified with two primary variables:

- The number of locations.
- The number of managers.

There are four different categories derived from the matrix:

- *Teleworkers*: team is at one location with one manager
- *Remote team*: team is dispersed at multiple locations with one manager
- *Matrixed teleworkers*: team is at one location with multiple managers
- *Matrixed remote teams*: team is dispersed at multiple locations with multiple managers

Cascio et al., (2003) highlighted that one dimension which was excluded from the matrix, yet important to take into considerations is "*that of time*, *where workers are on different or staggered shifts"*. In general, level of virtuality and the different forms of the teams will pose different and unique type of challenges and considerations.

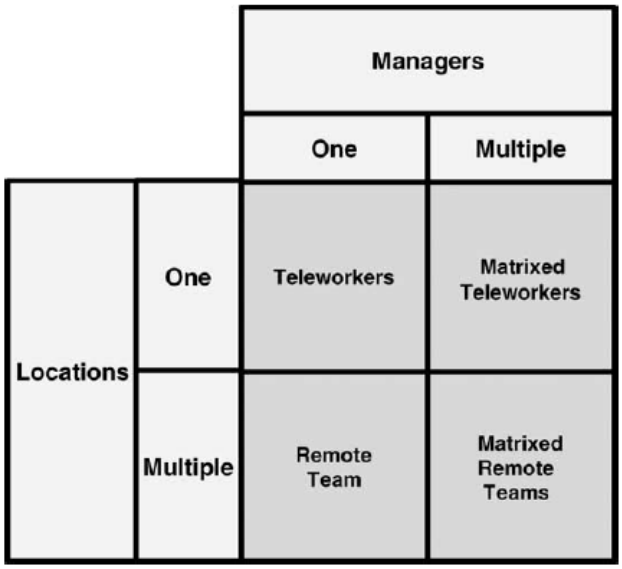

Figure 3. Virtual Team matrix (Cascio et al., 2003).

2.2 Advantages of virtual teams

Even though there are several considerations and possible challenges virtual teams may face, there's also a great potential that lays for virtual teams. This potential can be utilized with appropriate actions and processes. Firstly, working from virtual team will drastically reduce the travel time and costs (Bergiel et al., 2008). While most of the communication can be done via virtual channels it lets members to contribute from dispersed locations without unnecessary travel to face-to-face meetings.

When it comes to acquiring specialized workforce and resources virtual teams are less limited by the geographical constraints. Zaccaro et al., (2003) argues that "*e-teams have greater potential to acquire the necessary "human capital" or skills, knowledge, and capacities to complete complicated projects"*. Whereas Henttonen et al., (2005) states that "*virtual teams*

offer the potential for the efficient combination of a dispersed workforce and the potential for leveraging diffuse knowledge and skills effectively for collaborative innovation". Bergiel et al., (2008) view is aligned with the previous: *"virtual teaming emerges one of the more important management tools available to companies wishing as to take advantage of the pool of global talent"*.

Following the above it can be proposed that when expanding the geographical scope, more professionals are available in the candidate pool. Thus the probability to find suitable professionals with more superior problem solving skills increases as the amount of candidates is not limited by geographical boundaries. Therefore leaders are allowed to build highly specialized teams towards targeted problems and deliverables. Additionally resources from virtual teams may be rotated from different tasks and projects with agile manner, which brings more flexibility when considering human resource management and skills portfolio management.

Another factor that increases the flexibility is that virtual team members may work simultaneously in multiple teams, as geographical location is no longer criteria for team membership (Bergiel et al., 2008). Zaccaro et al., (2003) continues that virtual teams have also greater potential for generating social capital where "*social capital refers to the quality of relationships and networks that leaders and team members form in their operating environment"*. This in practice means that members of virtual team have their own unique network of contacts which they bring in to the team's availability. Zaccaro et al., (2003) continues that "*they can be connected to a broader scope of clients, customers, constituents and other key stakeholders"*. Team members may share the same geographical or cultural background with their contacts, which allows them to communicate more effectively towards the network as they possess fit social awareness and cultural intelligence. This provides a great potential when considering efficient communication towards key stakeholders or searching right persons and input to support the work.

Bergiel et al. (2008) summarized some of the advantages virtual teams have:

- Reduces travel time and cost
- Enables the recruitment of talented employees
- Promotes different areas
- Builds diverse teams
- Assists in promoting proactive employment practices for disadvantaged individuals and groups. Reduces discrimination.

2.3 Disadvantages of virtual teams

Nydegger et al. (2010) summarized well the starting point of virtual team's challenges as follows "*it does appear that the major difficulties with virtual teams has to do with the fact that being distributed and not co-located may lead to difficulties with things like relational communication and trust, but also with outcome problems like decreased productivity and work quality"*. Kimball (1997) explains (cited in Nydegger et al., 2010) that technology related issues are often blamed for virtual teams possible poor performance, however the root causes for problems are frequently individual and social related factors rather than technology related.

Further on Boiney's 2001 study (cited in Nydegger et al. 2010) found that the virtual team's performance problems in many cases stem from: "*poor sharing of information, unclear or inappropriate expectations, and unclear lines of accountability or control than from technology problems"*.

One key challenge also when describing virtual teams is the working in different time zones. Working in different time zones may lead to difficulties in communications as there may be only a short time window for contact, which again can result delays in different tasks and scheduling (Bergiel et al., 2008). More time zones are crossed, less there is overlapping time window for communication, hence when working from different sides of world the window will become almost non-existent. Such discordances in working times and possible delays may create personal conflicts and frustration amongst the team members (Zigurs 2003; Bergiel et al., 2008). These social frictions are again aligned to above statements; problems stemming from

social factors such as frustration. Thus it is crucial for both leaders and members to acknowledge these and pay attention to appropriate communication, scheduling and use of technology.

Failures and misinterpretations in communications poses a significant risk for virtual teams. Team members may come from different cultural backgrounds, have different level of language skills and therefore understand communication differently. When previous is combined with the lack of verbal ques, tones and body expressions the risk of misinterpretation is evident. (Avolio et al., 2003) People may misinterpret communications and get offended by the messages, even though messages in question were initially sent with innocuous mind. These misinterpretation may trigger conflicts which can be exceedingly difficult to manage as perception and interpretation relies heavily on non-verbal cues, which are not available within virtual communication (Zaccaro et al., 2003)

Yet misinterpretation does not always have to lead directly into a conflict. It may also cause inefficiencies when assigning and working with deliverables. In practice, if the requirements and specifications of certain task or objective are misunderstood, people may start working and developing something with incorrect basis, and by the time deliverables are reviewed its output may be completely different from what was ordered. Such scenario may cause loss of time, resources and create delays. Goodman and Bray (2014) described this as follows: "*failed mergers, acquisitions, and joint ventures due to cultural misunderstanding result in the loss of billions of dollars, cross-cultural communication breakdowns, fuelled by the lack of context and connection that can characterize virtual communication approaches, contribute to breakdown of trust and failed projects"*. Trust is without a doubt key consideration for virtual teams, this however will be further described in the following chapters as a specific topic.

Bergiel et al. (2003) listed some of the disadvantages that should be also taken into consideration when addressing virtual teams, quoted below:

- "*A lack of expertise in technological applications related to virtual teaming among some mature senior managers*", virtual teams may experience generation gap.
- "*A general lack of knowledge among employees about the higher level technological applications related to virtual teaming*", Snyder (2003) suggests (cited in Bergiel et al.

2003) that "*organizations create virtual teams with almost no understanding of the unique implications of that decision"*.

- "*The virtual structure may not fit the operational environment*", Joinson (2002) proposes (cited in Bergiel et al. 2003) that in example, industries within manufacturing may not be suitable for use of virtual team, as very sequential or integrated works may pose challenges.
- "*Some employees may be unsuited psychologically to work entirely in virtual space*": Joinson (2002) elaborates (cited in Bergiel et al. 2003) this as people "*who are stimulated by interaction with other people or who need external structure to stay on track may be unsuccessful in a virtual environment"*.

3 VIRTUAL TEAM PRACTICES & TOOLS

This chapter presents and discuss different processes, practices and tools related to virtual teams. Team-building, knowledge sharing, used virtual tools are important to understand and those are further described in this chapter.

3.1 Virtual teamwork process

When comes to team-building, it is one of the major concerns for virtual teams (O'Keefe, 2011). Tuckman (1965) presented nowadays four well known stages of team development: forming, storming, norming and performing. See figure 4.

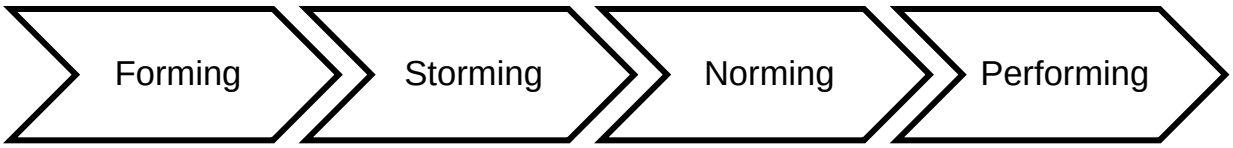

Figure 4. Tuckman's (1965) four stages of team development.

During forming stage team members get to know each other by introducing themselves, sharing information through discussions, agree on common goals, align expectations, and ideally to establish trust. Naturally, different opinions will arise and will evidently lead team to storming stage. During storming stage different opinion will conflict, which needs to be handled. End results ought to be that different roles and responsibilities are finally agreed upon. Thereafter team moves to norming stage. During this stage team truly creates and agrees on rules and common ways to conduct work, which will strengthen relationships and further on increase level of trust, coordination and clarify team's mission. After norming, team will reach the performing stage. In here team has went through a journey that allows them to work efficiently, reach goals while helping and encouraging each other. (Tuckman, 1965; Furst et al., 2004)

Even though Tuckman's (1965) four stages are well established, they were developed mainly with perspective on traditional teams, hence with virtual teams some altering may be needed as O'Keefe et al., (2011) suggests. Consequently O'Keefe et al., (2011) consolidated virtual team challenges against Tuckman's stages and interestingly also reflected those to traditional teams (see table 2). O'Keefe's et al. consolidation (table 2) was done by collecting various research findings from Lee-Kelley et al., (2014), Furst et al., (2004) and Meredith et al., (2009).

Table 2. Stages of Team Development: Traditional teams vs. Virtual Teams (O'Keefe et al., 2011, 97)

Stage	**Traditional Teams**	**Virtual Team Challenges**
Forming	• Team is created. • Members introduce each other. • Face-to-face communication. • Build trust • Establish informal communication at breaks.	• Team is created. • Introductions have to be completed using electronic communications. • Difficulty to build trust. • Lack of face-to-face communication. • Longer to develop relationships, may never achieve high-quality. • Difficulty engaging in informal communication during breaks. • Electronic communication creates further challenges: mistaken first impressions, lack of nonverbal creates faulty stereotypes.
Storming	• Team members vie for power or position. • Conflict emerges. • Manager can influence through negotiations or conflict resolution. • Manager could assign roles.	• Use of electronic communication may prolong this phase. • Lack of nonverbal cues or voice tones can create misunderstanding. • No accountability; with conflict members could refuse to respond. • Lack of trust could lead to team not having informal leader (if not assigned).
Norming	• Members agree on rules, norms, strengthen relationships. • Trust is increased.	• Difficulty coordinating tasks. • Rules should be established on communication type and response frequency. • Lack of structure; imperative team establish timeline and schedule for communication and task coordination. • Members may lack necessary discipline to fulfil team obligations. • Members may be reluctant to be critical.
Performing	• Members are working towards goal completion. • Members collaborate to help complete tasks	• Competition from local management or office could impact performance. • Failure to meet deadlines. • Lack of focus.

To raise few points from table 2. Furst et al., (2004) stresses that in the storming stage, where conflicts arises, traditional teams have better opportunities to solve them than virtual teams (face-to-face time), meaning that as virtual team communicates primarily via virtual channels it may prolong the resolution of conflict. Therefore Furst et al., (2004) warns that storming stage may take more time with virtual teams. O'Keefe et al., (2011) continues on previous that the use of Web 2.0 technologies may help and be substitute for face-to-face time and thereby reduce the time spend in storming stage, "*by utilizing tools that offer real-time visual and audio communication project manager can provide face-to-face communication".*

Later on Tuckman with his colleague Jensen (1977) introduced fifth stage called *adjourning,* which basically means that team or group will finalize and wrap up their work, and dissolve.

Similar type of steps for group stages are introduced by other as well. Interestingly Zander et al., (2013) addressed actions in creating teamwork dynamics, as they outlined the virtual teamwork process in three main phases (see figure 5):

- Phase 1: Welcoming phase
- Phase 2: Working phase
- Phase 3: Wrapping-up phase

Each phase description contains team's focus areas, leader's tasks and member's tasks. These phases can be considered as cyclic ones, meaning there's continuous loop from phase three back to phase one, as illustrated in the figure 5. In those phases there are a lot of similarities when comparing with Tuckman's (1965; 1977) stages, but Zander et al., (2013) managed to reflect those solely on the virtual team's needs.

Phase one, the welcoming phase, team has focus areas in aligning goals, building relationship and defining tasks. Leader's task is to facilitate and create common interpretation of goals, social context and trust. Also clarifying tasks and specifying outcomes are seen as leader's tasks. When it comes to members and their tasks, they are expected to build relationships and insights into own context. Members should also be mapping out tasks and own interpretation of objectives. (Zander et al., 2013)

Phase two, working phase, there team's focus areas are roles and processes, coordination tools and operations. Leader should define location of capabilities and knowledge, specify communication and decision making means, facilitate processes and interactions. Member tasks are communicating their own knowledge and capabilities, but also to establish own use of communication and decision making tools. (Zander et al., 2013)

Phase three, wrapping-up phase, is the final phase where team's focus points are finalization and de-briefing. Here tasks for leader are critical review of project processes and outcomes, reflecting on experiential learning outcomes and emphasizing global virtual team competence development. Members should conclude both in their own capability development, and effective global virtual team leadership. (Zander et al., 2013)

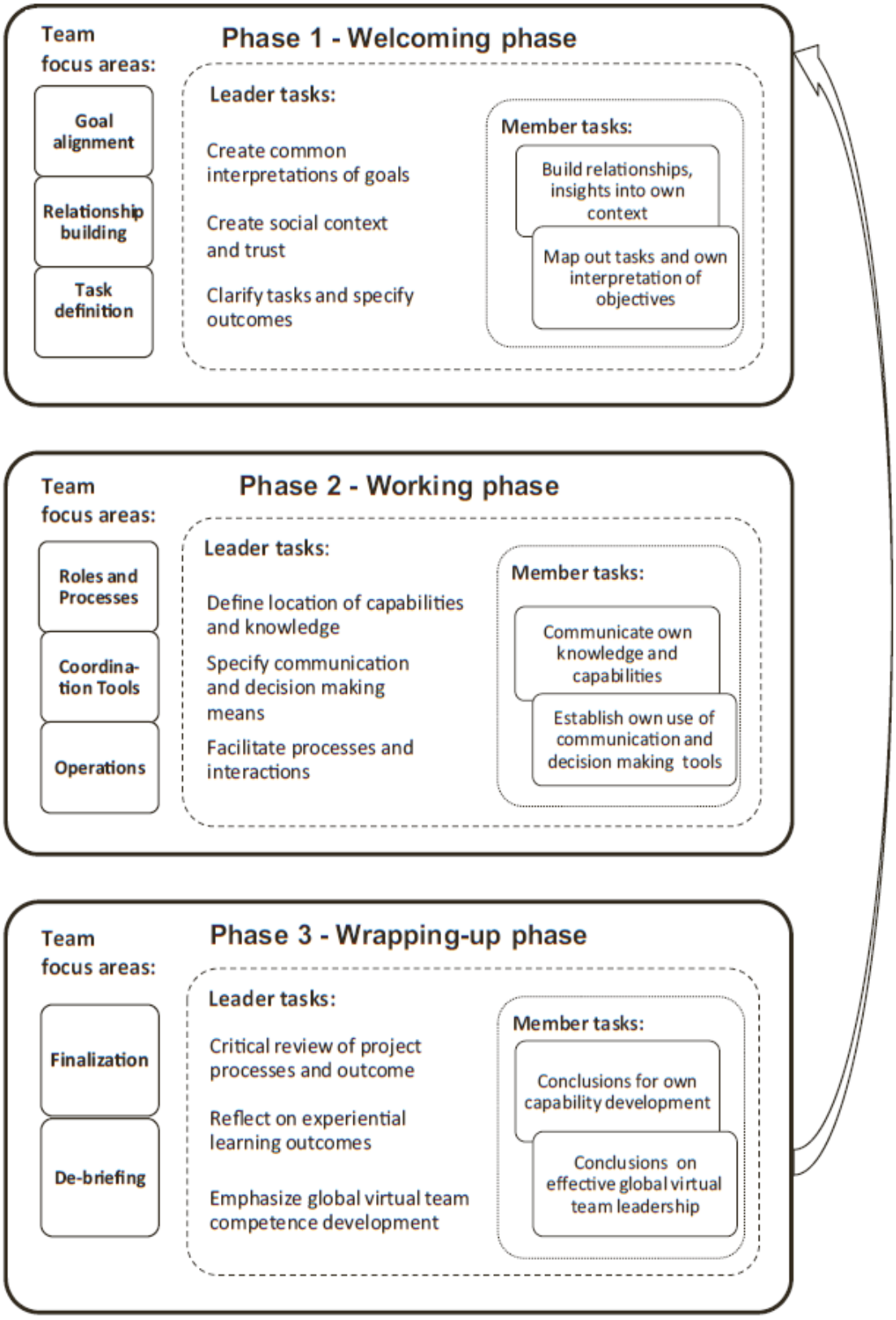

Figure 5. Leading Global Virtual Teams: Work Process, Action and Feedback (Zander et al., 2013, 23)

3.2 Knowledge sharing

Rosen et al., (2007) argues that virtual teams are more vulnerable to mistrust, communication breakdowns, conflicts and power struggles. To avoid such challenges it is crucial that virtual teams learn how to mechanisms to share individual and collective knowledge, such as creating trust, communicating early, and resolving conflicts openly (Rosen et al., 2007). Pinjani et al., (2013) states that "*the intellectual power of a virtual team is in its diffused expertise and ability to blend different experiences to create shared knowledge".* Knowledge sharing can be considered as dissemination of existing knowledge and bringing new knowledge from the external environment to the team (Rosen et al., 2007).

Virtual teams are seen to perform better, when they have effective knowledge sharing process Malhotra et al., (2004). The used technology in virtual teams supports knowledge sharing deeply, as wider use of different channels and media has been found to impact team's level of communication, effectiveness, efficiency, relationships and commitment (Workman et al., 2003). Even though Technology supports this process, it is not the only key element, but importantly the ability and willingness of team members to take part in the knowledge sharing process is crucial (Rosen et al., 2007).

Different barriers for knowledge sharing, but also best practices to overcome those are presented in the table 2. To elaborate few barriers and best practices, first barrier, constraints on building trusting relationships, can be seen also as wider challenge. Trust is not only to knowledge sharing but is also seen as one of the key parts of virtual teams to succeed (Zigurs, 2003). Additionally, Malhotra et al., (2004) conducted a research where they investigated 58 different global virtual teams and found out that "*the level of mutual trust was found to be positively related to knowledge sharing in global virtual teams"*.

Sixth barrier, mentioned also in sixth best practice relates to the transactive memory systems (TMS). Rosen et al., (2007, 261) explains that one way to have effective knowledge sharing to build transactive memory system. Transactive memory system (TMS) can be considered as a collective and cognitive team data bank, whereas Rosen et al., (2007) further explain that TMS "*represents the collective team knowledge that individual team members have developed or acquired, encoded, stored and can retrieve and that is potentially valuable to the team*".

Table 3. Barriers and best practices in knowledge sharing (Rosen et al., 2007, 263-267).

Barriers in knowledge sharing	**Best practices to overcome barriers**
1. Constraints on building trusting relationships.	1. Leaders as shapers of a psychologically safe team culture.
2. Time constraints and deadline pressures.	2. Overcoming time constraints and deadline pressures.
3. Technology constraints on knowledge sharing.	3. Adapt technology to virtual team needs.
4. Team leader constraints on knowledge sharing.	4. Leaders as knowledge sharing role models.
5. Failure to develop a transactive memory system.	5. Building transactive memory system.
6. Cultural constraints on knowledge sharing.	6. Overcoming cultural barriers to knowledge sharing.

Based on best practices, listed in table 3, Rosen et al., (2007) summarize their recommendation to create the conditions that facilitate knowledge sharing in virtual teams (see figure 6). In their recommendation model team leader needs to create a “safe” environment for team members to share knowledge. In addition team leader need to model appropriate behaviours. Also, discussion and documentation of team expertise is crucial to understand and identify different skills and capabilities. Selection of appropriate technology and recognition of cultural difference were seen important factor as well. Based on those factors and actions, knowledge and information sharing, with appropriate transactive memory system is applied, which will results satisfaction, motivation and increased performance for the virtual team. This is illustrated more in the figure 6.

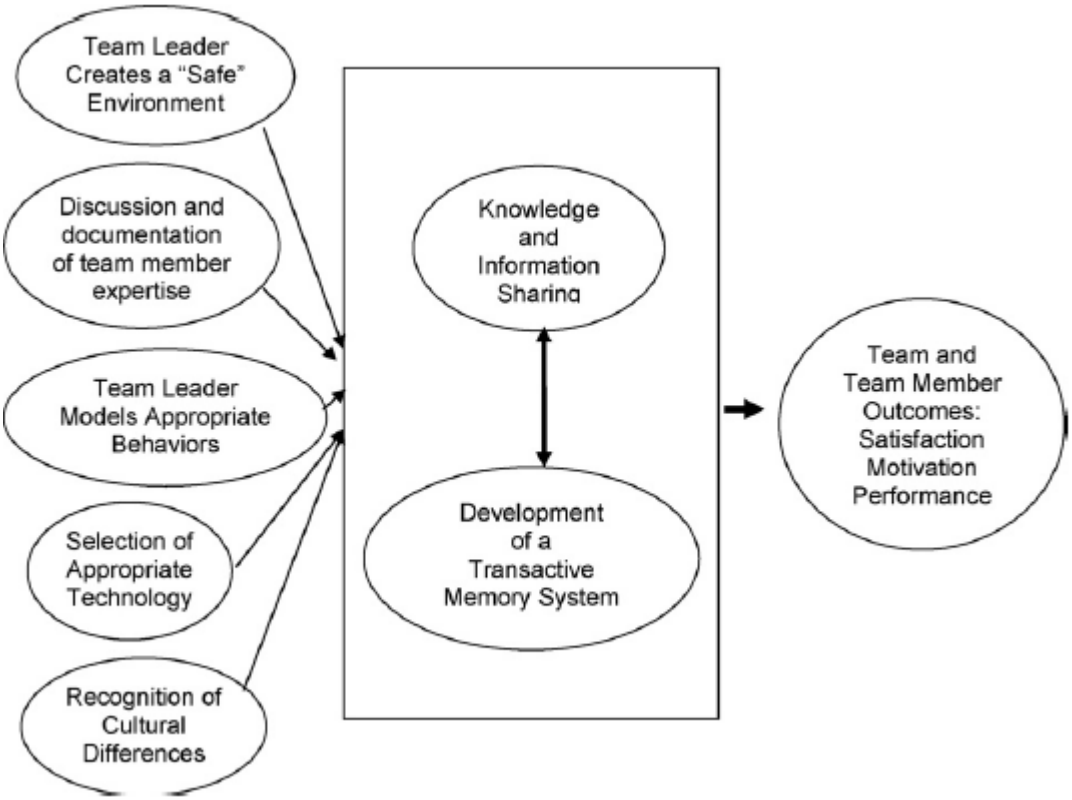

Figure 6. Facilitating knowledge sharing. (Rosen et al., 2007)

3.3 Advanced information technology

As it has been presented throughout this study, technology is the foundation of virtual teams. Avolio et al., (2014) explains that the use of advanced information technology (AIT) is increasing in organisations. AIT is used in virtual teams for various purposes, and when it comes to communication, common channel and form for virtual team to communicate is instant messaging, IM (Cameron et al., 2005). Instant messaging can be explained in example by real time chat windows in which team members communicate amongst each other, either in groups or separately. Avolio et al., (2014) states that "*current AIT is making it easy for individuals and organisations to create social networks, which are then harnessed for communication, coordinated actions, and learning"*.

Public social networking sites (SNS) such as Facebook and Twitter has been widely accepted and used, and it has augmented the use of similar social networking platforms for companies and organisations, these are referred as Enterprise Social Networks, ESN (Chin et al., 2015). Chin et al., (2015) defined ESN as a corporate social network which is designed for employees to establish corporate communities and create and exchange content. Chin et al., (2015) continues that "*the main idea behind ESN implementation is to gain business benefits, such as improved communication and collaboration, increased productivity of employees and accelerated problem solving, knowledge sharing, and innovation"*.

Enterprise social network (ESN) contains various type of tools such as previously mentioned instant messaging, but also ratings and review, social profiles, groups and communities, social tagging, whereas the various tools are more presented in the figure 6, by Chin et al., (2014).

The current platform and ground basis for ESN is referred as Web 2.0. The use of Web 2.0 tools improves collaboration, contribution and communication, where each tool provides for the virtual team unique benefits (O'Keefe et al., 2011). The teams using Web 2.0 are able to utilize tools such as blogs, communities of practices, cloud, wikis, Web conferencing, online document sharing and collaboration, and social networking sites (O'Keefe et al., 2011) as more illustrated by Chin et al., (2014) in figure 7 regards to ESN. These tools are crucial for virtual teams to exist and operate as, *"the Web 2.0 technology improves information exchange and communication within virtual teams"* (O'Keefe et al., 2011).

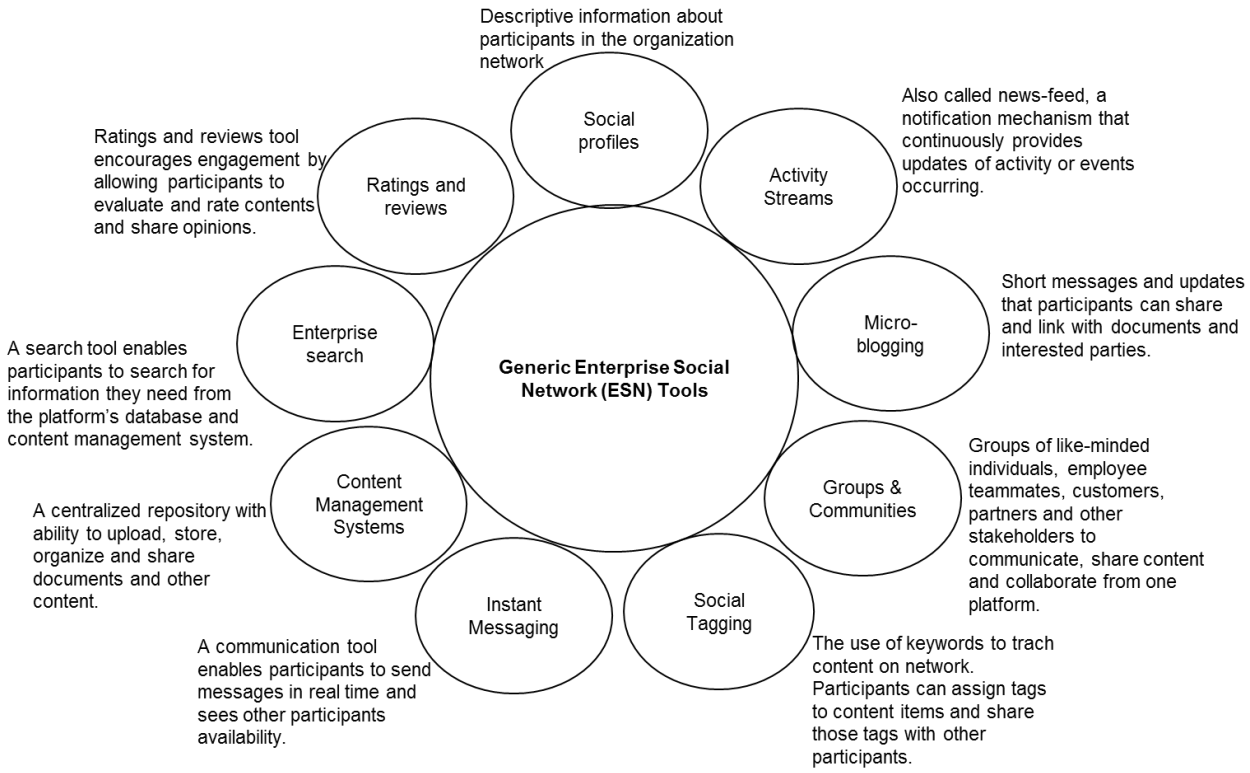

Figure 7. Generic enterprise social networks tools by Chin et al., (2014, 291).

3.4 Managing virtual teams

Avolio et al. (2002) describes leadership being *"a dynamic, robust system embedded within a larger organizational system*". When adding "E" to leadership, it simply stands for word electronic. Difference between *leadership* and *E-leadership* is that in electronic environment communication, work, tasks are mediated by information technology rather than physical interaction. As for the purpose of E-leadership Avolio et al. (2002) stated that "*the purpose of e-leadership too is to take the relationships among organizational members defined by an organization's structure and enhance them"*.

When considering leading virtual teams people often think mainly the technology involved. Whereas it is crucial to understand that virtual teams, similar to any team, are first and foremost social systems. Hence, regardless of the level of technology or the fancy software team uses, virtual team's success is dependent on the quality of the information available, how it is being

communicated, and how the group works together in synergy when delivering and completing tasks. (Nygedder et al., 2010)

As described in earlier chapters there are several advantages and challenges with virtual teams which leader needs to take into account. Zigurs (2013) described virtual environment place where "*trust is difficult to build, influence is difficult to express, self-leadership is required, and communication is often ambiguous"*. Virtual teams do hold unique aspects when compared to more traditional teams, therefore leadership needs acknowledge and cater for them.

Virtual teams are often described with having high level of autonomy, where leadership focus point should be more on the integrated people development, rather than having direct control (Zigurs, 2003). Leader needs to empower and transfer authority to the team members, this is even more crucial with the virtual teams, otherwise the leader will have to be involved in every decision making details and eventually becoming a bottleneck that prevents team functioning optimally (Nygedder et al., (2010).

Järvenpää et al., (2003) argued that "*the locus of organizational leadership shifts from decision making to relational management"*, meaning that primary role for leader is to harness key social relationship within the network, rather than solely providing strategic decision making. Further explained, leaders in virtual knowledge network may not have institutional or managerial authority over the individual, hence they cannot simply command to achieve strategic objectives. This emphasizes more relational role in facilitating and ensuring subject matter experts don't have obstacles in delivering their tasks.

As what comes to in facilitating and managing teams literature suggest in many cases that first team meetings, first impressions with initial messages are critical and tends to direct how team will interrelate (see in example Cascio et al., 2003; Henttonen et al., 2005). Thus first meetings should always to face-to-face meetings if possible, this is also mentioned by Zigurs (2003) as one of the success factors.

4 TRUST

Trust is crucial ingredient for team's success and is one of the key issues that have received fairly amount of attention from researches (Zigurs, 2003). Mayer et al. (1995) defined trust being "*willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular actions important to the trustor, irrespective of the ability to monitor or control that other party"*. Jonson-George and Swap (1982) states (cited in Mayer et al. 1995) that "*willingness to take risks may be one of the few characteristics common to all trust situations",* indicating that trust comes also with the risks attached. In long term, establishing and maintaining trust is by far the same for both traditional and virtual teams, however trust's importance for virtual team is more critical (Cascio et al., 2003). To elaborate, the prescriptions which apply to traditional teams may not apply similarly towards virtual teams (Henttonen et al., 2005).

Given the nature of virtual teams (i.e. dispersed in different dimensions) establishing and maintaining trust comes with special considerations. Geographical dispersion is by definition one of the virtual teams common features. However, another feature is that virtual teams are more likely compared to traditional teams established to exist limited amount of time, solely dedicated to targeted missions or tasks (Zaccaro et al., 2003).

With shorter life-cycle, in example with project related work, virtual teams are posed with significant challenges for trust creation. Tuckman & Jensen (1977) introduced different stages in which teams tend to go through when establishing trust: "*forming", "storming", "norming", "performing" and "adjourning"* as described in earlier chapters. Given the possible shorter timeframe where virtual teams operate, they may not have enough time to go through each stages. Furthermore, team members may feel less motivated to invest in trust as they acknowledge the momentary nature of the team. Yet, it is important to acknowledge that not all virtual teams are established with time limitations and there are teams operating virtually in permanent manner.

4.1 Role of trust

Trust is considered to be one of the vital parts for team's functioning, effectiveness and performance (e.g. Järvenpää et al., 1998; Solomon, 2001; Blomqvist et al., 2001; Henttonen et al., 2005). Brahm et al., (2012) conducted a study named "The role of trust climate in virtual teams", using moderated-indirect model which "*examined the relationship amongst team goal setting and team cohesion and their sequential relationship with performance, depending on the level of trust climate"*.

Figure 8 shows their initial hypotheses which were investigated by using longitudinal design with sample of 50 teams. The proposed hypotheses and moderated-indirect model was confirmed, accordingly there was "*indirect relationship between team goal setting and performance transmitted through task cohesion, which is dependent on the level of trust climate*" (Brahm et al., 2012). Hence the study and its findings suggest that trust have impact towards team's performance level, meaning that higher the trust level is, better performance could be expected from the team.

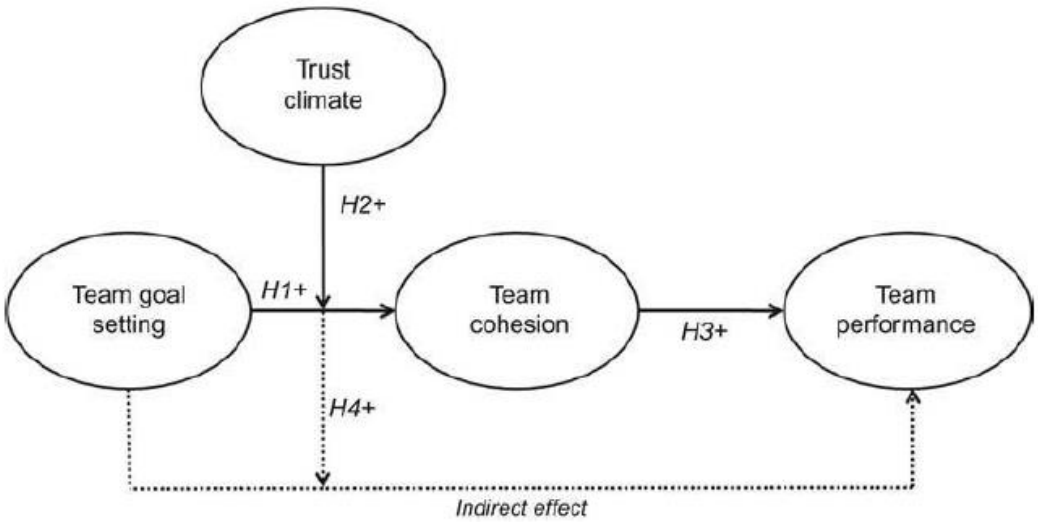

Figure 8. Brahm & Kunze (2012, 597)

However, trust or the lack of it doesn't necessary always mean good or poor performance. Aubert et al., (2002) conducted a study which also investigated trust and its relation to performance for virtual teams. Business students from two Canadian universities were involved. Total of 71 students were divided into 11 virtual teams and task was given: deliver

research project at the end of the semester. Aubert et al., (2002) found interesting and contradictory results which suggested that "*the level of trust among team-mates has a negligible effect on team performance".*

However Aubert et al., (2002) continued that the final level of trust between local and remote sub-teams had significant impact on effective performance. Interestingly some teams were able to deliver high quality outputs even though they experienced low level of trust, and vice versa. Aubert et al., (2002) concludes that "*although some low trust teams might have delivered high quality result, they may have experienced significantly more effort to do so than did high trust teams"*. Therefore it could be reasoned that when team experiences high level of trust they are more likely to be effective than low trust teams. This is important factor when considering efficiency levels as organizations are often operating with scarce resources, and would like to use the best out of them.

4.2 Trust creation in virtual teams

As mentioned above, literature suggest that teams or groups go through different stages when developing cohesion and trust: *forming, storming, norming, performing and adjourning* (Tuckman & Jensen, 1977). These stages includes agreeing on roles, tasks, standard operating procedures, shared understanding that will contribute to trust facilitation (see in example Tuckman & Jensen, 1977; Zaccaro et al., 2003) Failures in doing so may result process loss where team will not reach its highest level of performance, whereas virtual teams are more likely to experience such process loss than traditional teams (Zaccaro et al., 2003).

Mayer et al. (1995) states that "*a number of theorists have suggested that trust evolves over time based on a series of observations and interactions"*. Meaning, when team members have seen that their fellow member(s) produce high quality and desired deliverables, their trust increases towards the trustee. But also vice versa, trust can be fragile as Aubert & Kelsey (2003) reminds that "*even someone who tends to trust others can have that trust shattered if the trustee does not produce work of sufficient quality and does not deliver on commitments and meet deadlines*".

What are the ingredients for trust? Mayer at al., (1995) proposed three antecedents for trust creation: ability, benevolence and integrity. Mayer et al. (1995) described these antecedents as follows:

- Ability: "*is that group of skills, competencies, and characteristics that enable a party to have influence within some specific domain"*.
- Benevolence: "*is the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive"*.
- Integrity: "*…the trustee adheres to a set of principles that the trustor finds acceptable"*.

Aubert et al., (2002) study's findings are aligned to above with its parts of ability and integrity: trust to trustee was positively correlated with ability and integrity. Yet interestingly when it came to benevolence, they found no link to trust: "*thus, it appears that good intentions do not build trust; only the ability to perform and actually deliver on commitments (i.e., integrity) will lead to the formation of trust in the trustee"* (Aubert et al., 2002). This suggest that trust in some cases will come only with proven track records, team members will need to see with their own eyes that trustee delivers with sufficient quality, as Mayer et al. (1995) suggested above. Cascio et al., (2003) statement is aligned to previous: "*in a virtual teams, trust is established by repeatedly setting expectations and then delivering results that meet or exceed those expectations*".

Further on Henttonen et al., (2005) listed some antecedents of trust for virtual in their study being; reputation, social similarity, joint goals, commitment, personal conversations, care and concern for the well-being of others. They argued that previous antecedents "*do not appear to differ to any great extent from those in traditional teams where creation of trust is considered to take time*". But with virtual teams they stated that trust is often created at "*the outset of the team building*", and that the first impressions of the virtual team tends to direct how well the team will interrelate.

Cascio et al., (2003) also mentioned, aligned to above, that first impressions are critical and initial messages needs to be handled appropriately, while keeping the tone of all messages positive. Cascio et al., (2003) continued introducing an empirical analysis which investigated 29 global virtual teams using email as their main communication tool. Three common characteristics were found nominating teams with high trust levels. First, interactions began

with relational and social communication introducing their personal backgrounds prior to focusing on task related objects. Second, roles and responsibilities where clearly defined and set. Third, positive attitudes were demonstrated by the team members.

5 RESEARCH METHODS AND DATA

Following chapters discuss and presents research methods and used data of the study.

5.1 Qualitative research methods

Research will be conducted with following the qualitative research approach. Conceptual framework within this study is more fit when applying qualitative methods such as interviews. There are no strong hypotheses created as the concern is that those would influence the direction and outcome of the findings. So rather than creating hypotheses, data collection interacts with the conceptual framework going forward in identifying concepts and ideas as recommended by Hair et al., (2007, 153). Although in this case theoretical framework do give some direction to where to look into, and which parts could be relevant for reflection as following the abductive logic which is more elaborated in the data analysis chapter.

Further on Hirsjärvi et al., (2007, 157) states that the starting point for qualitative research is to describe *real life*, but taking into consideration that reality in that sense should not be too fragmented and scattered when conducting the research. Eskola et al., (2008, 13) simplify that qualitative research could be understood as non-numerical description of data and its analysis, yet when going through the data different quantitative (numerical) approaches could be utilized.

Hair et al., (2007, 152) listed some of the properties when looking into qualitative approach:

- More useful for discovering.
- Provides in-depth (deeper understanding) information on few characteristics.
- Discovers ‘hidden’ motivations and values
- More unstructured data collection techniques requiring subjective interpretation.
- Less concern for representativeness.
- Emphasis on the trustworthiness of respondents.
- Relatively long interviews (from half hour to many hours).
- Interviewer actively probes and must be highly skilled.
- Small samples (1-50).

- Results relatively subjective.

When looking above properties those do signify that qualitative research methods is more viable when looking into research questions within this study.

5.2 Data collections

This chapter describes and discuss how the data was collected and analysed.

5.2.1 Interviews

Data was collected via interviews, which is the most used method in Finland to collect qualitative data (Eskola et al., 2008, 85). Interviews were held as semi-structured interviews. Hirsjärvi et al., (2001, 47) describes that in semi-structured interviews the questions for interviewees are the same for all, but the answer are not strictly tied to answer alternatives, meaning interviewees may openly answer as per their own words. Also the order in which questions are presented can vary, as long as they remain the same.

Semi-structured interviews gives some more room for free flow of discussion as those are said to be more on the unstructured side rather than structured (Hirsjärvi et al., 2001, 48). And in this case it's important that interviews are to some extent unstructured as those allows more in-depth sight with identification of topics that wouldn't rise in completely structured ones. Interview guidelines were used to ensure that scope stayed on rail, and that all necessary aspects were covered.

Semi-structured interviews also suit for situations when there is only a limited (or one) chance to interview someone, which was the case in this research (Cohen et al., 2006). Eriksson & Kovalainen (2011, 82) states in regards to semi-structured interviews that their major advantage stems from the systematic and comprehensive materials, while the tone of the interviews are often somewhat conversational and informal.

Interviews were held during April 2017. All in all there were seven different interviews with seven interviewees. One of the interviews were planned as an test interview, however after

evaluation and feedback there were no identified needs to change structure, hence it was included to final data-assessment as well. Hirsjärvi et al., (2001, 58) states that there is no single number on how many interviews should be conducted, but interviews should be continue until necessary information is obtained. In these interviews the answers started to be similar and followed each other already in the early ones. Saturation point was therefore sought to be met around fifth and sixth, which was further confirmed on the seventh one, leading to a conclusion that necessary information was obtained

There was total ~380 minutes (~6.5 hours) of interviews. Average time for one interview was ~55 minutes, where longest interview took ~63 minutes, and shortest one ~42 minutes. Four interviews were held physically as face-to-face and three via phone. All interviews were recorded.

Table 4. Interview durations.

Duration type:	**Minutes:**
Average duration	55
Maximum duration	63
Minimum duration	42
Total duration	380

Before every interview background material was provided to interviewees to ensure efficient use of time allowing going directly to the point. Material contained the background of the study including research questions, but also some terms were defined such as *trust* and *virtual team*. This secured that interviewees perceived the terms and perspectives similarly without deviation in the understanding (avoiding misinterpretations as well).

During the interviews the interview guideline was kept in the background (in phone interviews screen was shared) while interviewing. Interview guidelines consisted the themes and some sub-questions related to the research questions and directed the investigation process (see appendix 1). Some questions were partly overlapping (as did the answers) however it was intentional and its objective was to ensure that all aspects were covered, as new thoughts one the matter could come when perspective or question setting was slightly changed.

After each interview feedback was requested and interviewees were asked did they feel that they have covered each step and answered sufficiently, and also that they understood the questionnaires, structure and background behind. All feedback was positive confirming successful conduction of interviews.

5.2.2 Interviewees

Interviewees are all working in virtual teams, in large multinational companies which all operate in financial and consulting industry. Bergiel et al., (2008) mentioned that virtual team members may work simultaneously in multiple teams, as geographical location is no longer criteria for team membership. This was the case with all of the interviewees as well, belonging to more than one virtual team simultaneously. Interviewees were allocated to different project-teams which also were considered as virtual teams, while still maintaining virtual team-membership also for their line organisations. More explained, interviewees belong to a parent organisation or team, which further on allocates them to a separate projects, thereby resulting membership in parallel virtual teams.

All of the teams, either parent teams or project-teams, are dispersed geographically and communication happens mainly through virtual channels. Project teams are consisting both internal members around different parts of organisations, but also external members hired as consultants. Geographical dispersion was mainly in Nordic countries (Finland, Sweden, Denmark and Norway), however project tasks occasionally included people also around the globe such as Baltics, Russia, Britain, Germany, Singapore and China.

Interviewees are stationed either in Helsinki or Copenhagen, and they represented three different nationalities: Finnish, Danish and Swiss. Four of them are considered as in team-member position and three of them as in leader position. Although those considered in team-member position do not have direct and formal subordinates, they manage large group wide projects.

Each interviewee was interviewed as independent professional, and they do not represent their current or former employer organisations. Thereby while interviewing they were allowed to use all of their experiences throughout the work-life spectrum detached to the any organisation.

This allowed a wider range of experiences to be investigated and brought up, as those were not limited to any single organisation. Research questions within this research do not require to lock in to any organisation, hence the method was considered as advantage in getting findings. However, even though interviewees are considered as private and independent professionals, they do share significant common nominators allowing to group the findings and create conclusions with generalizations. Common nominators being the same industry, situated in the Nordics and working in virtual teams.

Interviewees work experiences in total constituted around ~77 years. Most experienced interviewee has 18 years professional experience, whereas the youngest in terms of professional experience has 4.5 years. Average professional work experience amongst the interviewees is ~11 years. When it comes work experience solely in virtual teams longest is 16 years, and shortest 1 year. Average experience working in virtual teams is ~6.5 years.

Table 5. Interviewee backgrounds.

Interviewee	Position	Nationality	Stationed in	Work experience (years)	Virtual team experience (years)
Interviewee 1	Team-member	Finnish	Helsinki	8,00	2,00
Interviewee 2	Team-member	Finnish	Helsinki	4,50	3,50
Interviewee 3	Team-leader	Danish	Copenhagen	9,00	1,00
Interviewee 4	Team-leader	Swiss	Helsinki	18,00	10,00
Interviewee 5	Team-member	Finnish	Helsinki	16,00	16,00
Interviewee 6	Team-leader	Finnish	Helsinki	12,00	9,00
Interviewee 7	Team-member	Finnish	Helsinki	9,00	3,00

5.3 Data analysis

When analysing the collected data qualitative research methods were used. Eriksson et al., (2011, 21) explains that there are two basic aspects of inquiry which are deduction and induction, and when utilizing both deduction and induction some researchers call it as abduction. Eriksson et al., (2011, 22) further explains that in deduction theory is the first source of knowledge, meaning it follows the logic of proceeding from theory to empirical research.

Whereas in induction theories are outcomes of empirical research, meaning it follows the logic of proceeding from empirical research to theoretical results. Eriksson et al., (2011, 23) states that "*abduction refers to the process of moving from the everyday descriptions and meanings given by people, to categories and concepts that create the basis of an understanding or an explanation to the phenomenon described"*.

The analysis in here could be described as having features of abductive logic. There's already existing theory and literature around the research themes, which supports the framework creation and could be reflected towards the finding, but also vice versa, reflecting the findings back to the existing theory in terms of confirmation and possible deviations.

Hirsjärvi et al., (2001, 144) explains analysis process as after data have been collected it is described, coded, synthesized and reported. Similarly analysis process was described by Dey (1993, 31) as three step process consisting description, categorisation (equivalent to coding) and combination. Previous process was also followed in this research. Data was first collected and recorded, transcript, coded and categorised, and thereafter further analysed to create synthesis and conclusions.

First step in this research for collecting the data was recording the interviews. Hirsjärvi et al., (2001, 138) states that after recording researcher has two options:

1) Transcription word on word, or transcription in a selective manner.
2) No transcription, but making conclusions and coding directly from the recordings.

Second option can be seen more viable when there's a limited amount of data. In this case, selective transcription was chosen. It was deemed being sufficient when considering in getting the relevant inputs and findings in regards to research questions. Analysis did not include any discourse analysis or other type of methods which may require word on word transcriptions. Multiple iterations were conducted in listening the recordings and updating the transcription notes.

After the creation transcription notes, different categories were created. Creation of categories was based on the research questions and inputs given by the interviewees, as Hirsjärvi et al., (2001, 148) suggest. After the category creation the data was summarized to a single file, and grouped under the categories. In order to keep track which data-set belonged to which interview, individual colour values where given to each data-input.

All inputs were then further on summarised and grouped under selected category. Excel and its different data-functions was utilized in this process as well. Categories were linked to each research questions, with consolidated inputs under own categories. All of the consolidated inputs also consisted sub-inputs, this was done in order to ensure that all aspects were included. In other words, data and inputs was categorised from high level groups to detailed groups. Meaning that larger categories are built from many single input, and vice versa each input could be traced from their so called parent category. It allowed to make generalized conclusion based on multiple inputs. Grouping and categorisation with their linkage to each research question could be illustrated as in figure 9.

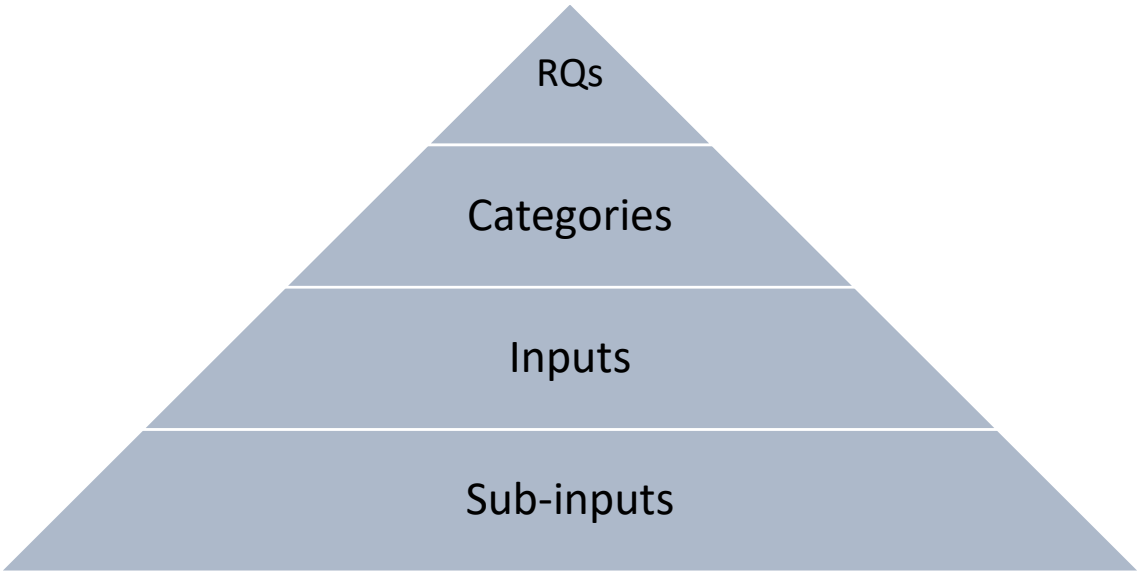

Figure 9. Structuring and linking data.

Analysis also included mapping the occurrences of each input. This allowed to see whether some inputs were given in many different interviews, and thereby helped to evaluate their significance, but also saturation point in general. Separate columns were created to the excel files, that indicated the connection of categories to other categories. That helped further on creating synthesis and conclusions, rather than staying only on the descriptive level.

Some minor quantitative data was also collected: total working experience, working experience in virtual teams, durations of the interviews in addition to other background information such as nationality and location. Out of those figures basic calculation were done such as average, minimum and maximum values. Based on those value input were evaluated to look whether they may have linkage to some inputs. However, no significant linkage was found between the inputs and above values. Further findings are more described in the following chapter.

6 FINDINGS

This chapter presents the findings from the interviews held and describes what interviewees answered regards to questions and themes. Some quotes are also chosen from the interviews to support picture of findings.

6.1 Advantages of virtual teams

One of the major advantages seen for virtual teams was *flexibility*. It was mentioned in every interview. Flexibility stems from the nature of work virtual teams are operating on. Work is not tied into a certain place nor time, thus people have the access and opportunity to work whenever and wherever. It gives people the opportunity to plan their day and manage use of time in a flexible manner which would also create efficiencies (being agile way of working). Connection to less travelling was also seen into this context, people are not required to travel as often when tasks could be handled via virtual channels. Less travelling additionally reduces costs, but also leaves more time to hands on work (efficiency). Cost reduction could also be achieved when outsourcing business processes and utilizing different cost levels.

> *"In the end it does not really matter whether one is working from home or elsewhere and that creates the flexibility, this of course depends on the tasks as some may require more presence"*

Flexibility was also seen increasing the availability of people as they could plug into a network at any time in case of need. Some saw that such flexible way of working increases motivation and satisfaction as people can take more ownership on their work, but also making it easier to adjust work-life-balance. Some even described that instead of using term 'work-life-balance' they would prefer to use term 'work-life-integration'. However, important factor to acknowledge is that person needs to feel comfortable in working such manner. Flexible nature of work, described above, can also be perceived negatively if person would prefer more traditional ways of working; meaning fixed working hours and appointed location. Persons suitable for virtual team and work is more elaborated in the coming chapters.

"Also from the employee perspective a big benefit comes from the flexibility. In some occasions I have done work while being on a road to holiday destination, which saved a lot of time as I was enabled to leave early while still delivering promised work tasks. That we call work-life-integration, I am not limited by the physical office premises"

Geographical dispersion was seen bringing several advantages (but also disadvantages described in next chapter). Virtual work where people are dispersed allows building services and operations cross time-zones, which further on allows to set-up 24/7 services. Continuous work around clock was possible, as when one team finishes their work it could be continued in the next team or member.

"If you have tasks that are needed to do around the clock, you should have virtual teams around the globe where hand-over of tasks happens from one team to another from sunrise to sunset"

Also having the possibility to recruit from different locations brings larger talent pool available where specific knowledge could be gained. Therefore tasks that require different local knowledges, e.g. local legislation, are easier to tackle when team consists persons having local knowledge. Importantly team gains larger people network to be utilized, meaning as each member brings their own contacts and stakeholders from their location available for whole team.

"If you need to tab into a specific knowledge in one or other geographies, such as legal or market understanding, and cover all those geographies, it makes sense to build virtual team out of those people from these locations"

Table 6. Findings: advantages.

Advantages	**Sub-inputs for advantages**
Possibility to utilize time-zones	• 24/7 services • "Following the sun" • Continuous work
Flexibility	• Work is not tied to time nor place • Availability • Time-management • Efficiency • Work-life-balance/integration • Work satisfaction/motivation
Less travelling	• More time for work • Cost savings • Efficiency
Local expertise from various locations.	• Local expertise also dispersed geographically (global expertise)
Wider access to different local networks	• Each team member brings their local network available for the team.
Access to larger talent pool	• Recruiting is not limited to single geographical location.
Cost savings	• Less travelling Business process outsourcing (wage levels)

6.2 Disadvantages of virtual teams

One of the major disadvantages and challenges found was risk of misinterpretation, meaning people misunderstand the message which was communicated. This was seen more evident in virtual teams than traditional teams. Missing physical ques and expressions combined with other communication challenges was seen the source for it. It was seen causing inefficiencies, frustration and possible conflicts.

"When the physical expressions are left out it is very challenging to notice whether the other has truly understood the message correctly, or if the other is a 'sitting question mark' and for some reason unwilling to ask clarifying questions"

Communication in general was seen a challenge and possible risk factor in virtual teams. Many have experienced difficulties in information reaching the right people on the right time. Information flows doesn't always reach all the people in virtual teams. Imbalance in communication, meaning that others are more informed than others, was described as a real risk. Different coffee-machine and hall-way talks where people tend share information are in large parts missing from virtual teams, and may cause more imbalance to the information sharing.

"Missing the informal talks have led to a situations where others have agreed on actions, and those actions were then considered as 'communicated' ones. Later on when noticing misalignment it turned out that these so called 'communicated' actions were agreed in some hall-way talks where information never reached us"

Another significant disadvantage was that it is challenging to build trust in virtual teams, and thereby creating team-spirit and commitment. Communication in virtual channels is often more formal and straight to the point, leaving informal talks less present. It was seeing that it's difficult to get to know others due to this and create trust.

"Virtual meetings tend to be very formal with agreed agendas, where informal talks are left outside of the virtual meetings"

Geographical dispersion may also cause people to feel less connected to the team, especially in cases where majority of the team is in one location leaving few members dispersed. Persons in other locations may be "forgotten" and have a 3rd wheel feeling. Additionally immediate help and support can also be limited for these persons, and is more probable when working in different time-zones.

"It was hard to sit alone couple of years while others were co-located. Information did not flow there that well, and sometimes I felt both lonely and being left alone with problems. Time difference worsened it. I didn't really feel being part of the team"

Lack of transparency on tasks and progress was seen disadvantage as well. Working in virtual channels makes it challenging to monitor progress and see what others are actually working on. This may cause loss of holistic picture, and lead to a situation where people are working parallel and duplicate tasks. Also in some cases people may not understand the importance and impact of their part of the work, and therefore are unable to prioritize use of time or understanding the impact if the particular task is not delivered correctly. Some also saw that it is easier to disappear in virtual teams and go "hiding". This was seen as in not answering to emails, calls and being inactive in meetings.

Table 7. Findings: disadvantages.

Disadvantages	**Sub-inputs for disadvantages**
Risk of misinterpretations	• More evident than in traditional teams • Missing physical ques, expressions and reactions.
Challenging to build trust	• Harder to get to know people • Takes more time • Less informal discussions
Lack of physical expressions	• Harder to get to know people • Misinterpretations • Communication challenges
Lack of transparency on tasks and progress.	• Evaluation progress is challenging • Hard to see holistic picture
Challenges in information flow/sharing.	• Risk of missing relevant information, or getting it on time. • Missing coffee-machine and hallway talks • Imbalance in information.
Challenging to create team-spirit and commitment.	• Less informal communication • Less committed and obligated • Lack of "faces" • Difficulties in shared responsibilities
People may feel disconnected toward the group.	• Person in different location may be "forgotten" (3rd wheel feeling) • Availability, support and help is limited. • No group feeling • Easier to go hide and disappear.

6.3 General considerations

It was considered and asked on different work tasks or situations and work nature in general, where virtual teams are more suitable and fit. Out of those interviewees saw that knowledge work is primarily more suitable for virtual teams. Moreover it was described that global international tasks and situations suits, especially when tasks are divided in different locations.

And when turning the question around: which type of tasks or work situation virtual teams are seen as more unsuitable and less fit? Common nominator for many interviewee's answers related to complex, innovative and creative tasks. However, it should be understood that virtual teams are capable of doing such tasks, but when in hands on working tasks that requires several iterations and brainstorming, those may be easier to handle when people are physically in the same locations. So rather than implicating that virtual teams are less capable in complex and innovative work, answers mainly related to the choice of channels in which those tasks are preferred to handle. Also, situation where there is a strong need of control, monitoring and need to frequently touch basis, virtual teams and their nature of work was seen less fit than with traditional teams. Additionally it was described that more operational the task is, more it fits to traditional teams. Simplified exampled for operational task could be assembly line type of work, or very repetitive tasks with need of immediate help and support.

> *"With tasks that are fairly complex, have fast iterations and where people need to touch basis several times a day, a local team with people sitting right next to each other's would most likely be more efficient and effective than virtual team"*

Cultural differences were also mentioned as a consideration. As virtual teams may consists people from different cultural background it may pose challenges. In some cultures in example fear of losing face is so strong, they may be more reluctant to admit if something was not completely understood. Also when different cultural backgrounds collapses together, there may be friction in between the members. Some people can be more straight-forward, whereas some

people need more formal approach with strong consideration not to create conflict. Cultural differences may create more need for monitoring as one of the interviewee mentioned.

> *"We worked a lot with colleagues from other side of the world through virtual calls. It took a long time to realize they were too polite to ask clarifying questions. Therefore in the beginning we assumed that after giving the instructions everything was clear and actions will be taken accordingly. However when receiving incorrect deliverables we understood that due to fear of losing face they were hesitant to admit not understanding the instructions"*

6.4 Best practices and tools

When knowing the considerations, advantages and disadvantages it was important to know what are the best practices and tools that supports virtual teams to succeed and overcome challenges.

If the team has the possibility, then regular physical meetings were highlighted as an important practice to do. These meetings were seen as a way of building team-spirit and establishing trust. It gives opportunity for informal talks, and to get to know each other. Team-building exercises are good to practice during these meetings if possible. After people have met in person and had chance to get to know each other (gaining real faces to virtual profiles), it was said that threshold for approaching via virtual channels was lower, communication improved and trust was increased. Such meetings should be arranged in example once in quarter or when new employees are joining in. Besides regular team-building meeting, it was recognized that most critical phase to have a physical meeting is in the beginning of a project or other larger task.

"Especially In the start phase of a task or project it would be beneficial to have a physical meeting where people would introduce themselves, build trust and establish the ground rules. After that it is easier to follow up via virtual channels when the task or project proceed"

All day meetings or workshops that require intense brainstorming and several iterations were recommended to have in physical meetings. Being all day in a call can be tiring and frustrating which may lead people being less active, also threshold for raising thoughts and speaking your mind in virtual meeting was seen higher than in physical meeting.

Being aware of which channel to use which topic was important. All messages doesn't fit for all channels. In general, physical meetings were recommended when topics were seeing complex and critical, where everyone's active participation, inputs, commitment and understanding was needed. Also when delivering news that may be seen as negative, or which included feedback or motivation, interviewees wanted to see the other party's physical reactions. It would allow to adjust the approach and communication as per one's physical reactions and controlling the meetings direction. In case physical meetings were not possible, then video calls were recommended. Order of the channels are placed in below (figure 10) were topic's sensitivity, importance or complexity increases while moving from emails to physical meetings. Sensitive and topics with risk of misinterpretations and conflict are to be avoided in emails.

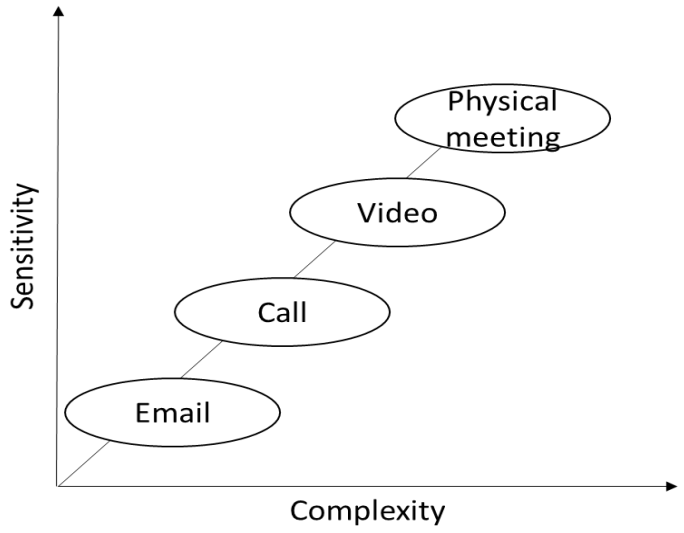

Figure 10. Communication channels in sensitivity/complexity-matrix

Regular follow-up and stand-up meetings are also needed to book to see how people are progressing and sharing information. Even when there's no formal agenda in every session set, those regular stand-up meeting were experienced important as it gives people the opportunity raise topics and concerns which can be seen as a substitute for "coffee-machine talks". Those sessions also provides opportunity for informal talks which allows people to know others more and thereby increasing trust amongst the team members.

Other best practices were mentioned that it's vital to ensure that team members have balanced communication where information reaches people on time. In practice it was not always possible, but at least when it came to key messages those were to communicate to everyone simultaneously.

A lot of emphasis goes to communication. It needs to structured and as clear as possible. Common guidelines for communication, working methods and behaviour needs to be established alongside with clear roles and responsibilities. These are very much due to the higher risk of misinterpretations and therefore a lot of focus in communication needs to be in place.

When arranging online meetings preparation work is needed, meaning invitations, background material and agenda with objectives of the meeting is recommended to send prior to the meeting for participants. Meeting ought to be well structured and organizer needs to facilitate and moderate the meeting.

To achieve efficient and successful work different tools are being used. There common repository were information is placed and is available for everyone to access, read and modify are used. Those would also support the equal communication and prevent imbalances. Virtual Kanban meetings were also raised in several occasions, those sessions would also provide insight into what others are doing, what needs to done and statuses in general. Most commonly used tools were emails, real-time chat (also group chats), phone, video-calls and virtual conference-calls.

Table 8. Findings: best practices.

Best practices	**Sub-inputs for best practices**
Regular physical meetings	• Increasing trust • Knowing the people - easier to approach after wise. • Team spirit
Regular stand-up and follow-up meetings	• Opportunity to monitor progress • Giving opportunity to speak and raise issues • Also informal talks. Important to keep even if no formal agenda • Check-points
Work-shops and all day meetings held physically	
Key messages communicated simultaneously to people.	• Avoiding imbalance in communication
Ensuring people are equally allocated in different locations	• Avoiding that someone is being left alone in a pocket
Clear roles & responsibilities	
Preparing meetings up front	• Clear agenda, objectives, goals and key message.
More complex the matter, higher the need for physical meeting.	• Avoiding complex and conflict sensitive topics in emails. • Prefer to have physical, or phone call with video.
Feedback, sensitive and negative news handled physically.	• Able to read persons reactions and adjust approach and communication accordingly, especially if negative news.

6.5 Capabilities and skills

What type of persons can succeed in virtual teams? And what type of capabilities and skills supports the work? These were investigated and interviewed and one skill rose above all: communication skills. Communications skills are needed as well in traditional teams, however as it was described above virtual teams experience significant risk for misinterpretations, therefore communication skills suitable virtual teams were experienced being vital.

"The role of communication increases when communicating through virtual channels. Messages needs to be very clear and well structured. It is important that you are able to express yourself but also to read others, that includes considering the tone of messages"

Person needs to be able communicate in a structured and clear manner ensuring that people understand the message. Additionally one should follow the best practices and understand which channels are suitable for which topics.

Organising virtual meetings requires strong facilitation skills especially when amount of participants increases. Knowing that in some cases people may hold their thoughts in virtual meetings facilitator needs to acknowledge this and get people providing input and their views. It is important one gets others commitment to the topic and thereby achieves the wanted actions and end results. When physical ques and reactions are missing, one should also be sensitive whether message is understood and people have brought their ideas on the table. This requires knowledge on cultural differences, as some may feel less comfortable in challenging or admitting that message was not understood.

Naturally IT skills were also seeing vital to have, due to the fundamental fact that virtual teams operate in IT centric environment. One should use the tools effectively but also learn quickly new ways of working both in tools and methods.

When considering people type interviewees mentioned that one should be very much self-driven, self-motivating and independent. This relates to the nature of work where there are many tasks done individually without immediate group presence or monitoring. It was more elaborated that one should be confident working alone with limited access to support and help. Problem-solving skills are therefore needed. However, one should also understand the limits of skills and realize when it is time to ask support. As there is less monitoring on the progress self-discipline is needed, and person ought to deliver without further pushes.

Additionally, suitable person types were described as open-minded and flexible. They need to be comfortable with nature of virtual work, which is different from the traditional ways of working. This was further explained that person can work in manner that is not limited neither time nor place, and does not mind travelling. Open-minded attitude comes also with embracing new ways of working and tools which may change time to time.

Interviewees mentioned that extremely shy persons may have challenges in virtual teams. This comes from the point that virtual team work consists frequent communication with different stakeholder. Therefore person should feel comfortable in reaching out to different stakeholder and arrange sessions or meetings when needed. Also when arranging meetings or sessions strong facilitation skills are needed, in order to achieve meetings objectives and getting participants commitment to the topic.

"Being self-driven, self-motivated and independent is needed as support is not always there. It is important to be open for new things as everything is not done in traditional ways, also being able to stand uncertainty is needed."

Table 9. Findings: capabilities and skills.

Capabilities and Skills	**Sub-inputs for capabilities and skills**
Communication skills	• Most important skills, vital to have. • Able to present clearly, structured and right things to right people, • Knowing which channels to use and when
Strong facilitation skills	• Able to facilitate both online and physical meetings • Getting peoples commitment • Getting people to speak up and bring their thoughts in.
IT skills	• Able to utilize different tools effectively • Able to learn new tools and adjust quickly
People skills	• Being sensitive on how people react as there's no physical queues

6.6 Trust: Role and Creation

Trust is experienced one of the most important factors to have in place for good and efficient team work.

When it came to role of trust interviewees mentioned that is absolutely important to have in place. It is the glue that keeps team together and helps to achieve common goals and objectives. Trust was seen important in both virtual and traditional teams, however it was mentioned that trust is perhaps more critical in virtual teams. Reason for that is that given the nature of virtual work, less monitoring opportunities and transparency, people need to rely that other will perform their tasks as agreed without witnessing progress in their “own eyes”.

> *“It is important for both traditional and virtual teams. But in virtual teams trust is more critical. You cannot control and monitor people in virtual teams as in with traditional ones, that is why you are left to rely and trust others more”*

There was no single formula given how to create trust. Yet physical meetings were raised in several occasions. Physical meetings were experienced to be effective way of creating trust, especially when those meetings included opportunities to get to know each other.

In trust creation informal talks were highlighted to be important way of establishing trust. When one reveals and opens other matters than work-related, such as hobbies and interest it establishes trust and people feel more comfortable with each other. This was said to bring the "human" out from the virtual profile. Informal talks were compared to coffee-machine and lunch talks which allows other to introduce themselves. Even though virtual meeting are often more formal, informal talks could be have also in virtual meetings, especially in regular stand-up meetings which are used for general discussion.

"Once you know the other more personally, meaning the person behind the "work me" it is easier to gain trust. That is why informal talks, lunches and team days are important. Physical meetings brings up the "human" out the skype picture"

Evolution of trust was said to take more time in virtual than in traditional teams. It was explained by lack of physical meetings where people get to know each other more easily. When asked how trust usually evolves interviewees answered (beside after getting to know each other) that when they see that one keeps their promises and delivers what was asked in a timely manner with good quality. It was further described to be a gradual process that builds on time and actions.

"When I see that the other is keeping promises and delivers what was agreed with good quality I will gradually start trusting the other. It happens step by step."

Table 10. Findings: Trust.

Role and creation of trust	**Sub-inputs for trust**
Role: Important in both traditional and virtual teams	• Both teams needs trust in order to function well.
Role: More critical in virtual teams	• Less control/monitoring availabilities therefore team needs to rely more in trust.
Role: Extremely vital	• VT doesn't function without trust • If no trust, people will leave. It is easier to leave from virtual team than traditional (less personal).
Creation/Facilitation: Physical meetings	• Efficient way to build relationships.
Creation/Facilitation: Informal talks	• Lunches • Introducing self • Coffee machine talks
Creation/Facilitation: Team-building exercises	• Also physically
Creation/Facilitation: More challenging to create trust in virtual teams	• Take more time • People need have physical ques when talking informal talks, where informal talks are seen extremely important for trust
Creation/Facilitation: Trust creates also when seeing that other keeps promises and delivers what was asked.	• Gradual process

7 DISCUSSION AND CONCLUSIONS

This research studied the advantages, disadvantages and considerations of virtual teams. Considerations in this context refers to acknowledgement of actions and behaviour that support efficient and effective work within virtual teams, meaning best practices, tools, capabilities, skills and trust. In this chapter research questions are answered with reflecting findings to previous literature, and discussing managerial implications with practical point of view. Thereafter limitations are evaluated against reliability and validity, with suggestions for future research.

7.1 Theoretical implications

Next research questions are answered with reflections between findings and previous literature. Findings confirm and support the existing literature, and are largely well aligned.

7.1.2 What are the advantages and disadvantages of virtual teams?

For advantages flexibility of virtual teams was strongly being part of the findings. Interviewees elaborated that flexibility comes from the opportunity to work wherever, and whenever without being tied to physical premises. Bergiel et al., (2008) also highlights that virtual teams are flexible, and continues that flexibility increases as geographical location is no longer criteria for team membership, and therefore virtual team members are able to work simultaneously in multiple teams.

Geographical dispersion of people can also bring advantages. It was found that geographical dispersion enables access to specific local knowledge, thus allowing to build a team out of people who possess local knowledge such as market or regulation understanding. Gaining such knowledge would be otherwise difficult if limited only to certain geographical location. This finding is also supported in literature, Zaccaro et al., (2003) argues that virtual teams "*have greater potential to acquire the necessary human capital or skills, knowledge and capacities to complete complicated projects"*. Henttonen et al., (2005) support this by stating "*virtual teams offer the potential for the efficient combination of a dispersed workforce".* Being able to hire

people from various geographical locations means access to larger talent pool which in turn supports the recruitment process of finding skilled people. Bergiel et al., (2008) is aligned with previous by stating "*virtual teaming emerges one of the more important management tools available to companies as to take advantage of the pool of global talent"*. Additionally Zaccaro et al., (2003) points out that geographical dispersion will also give greater potential for generating social capital, which refers to the relationships and networks that team members brings from their operating environment available for other team members. This was also found during the interviews that people felt their so called stakeholder portfolio widens when members brings different contacts to the table. Zaccaro et al., (2003) explains that this why "*they can be connected to a broader scope of clients, customer, constituents and other key stakeholders"*.

Another finding relates to the time management and cost reduction. Interviewees felt that they do not have to travel as often when being able to work via virtual channels. This leaves more time for actual work, but also reduces travelling costs. Bergiel et al., (2008) confirms that advantage for virtual team is reduced travel time and costs. Cost savings were also seen coming from business outsourcing to locations with lower wage levels. Additionally virtual teams were seen able to build 24/7 services where tasks could be handover to others working in different time-zones, creating continuation from sunrise to sunset.

Major disadvantage for virtual teams was found to be risk of misinterpretations. Interviewees stressed that messages can be often misunderstood that can result incorrect deliverables, conflict and loss of time. It is also mentioned in literature, in example Nydegger et al., (2010) mentions that virtual team challenges often appear in bad relational communication which in turn leads to decreased productivity and work quality. It was found that misinterpretations may also cause conflicts, which is supported by Kimball (1997, cited in Nydegger et al., 2010) that root cause for problems in virtual teams often stems from social related factors. Interviewees saw that lack of physical expressions and cultural differences increases risk of misinterpretation. Avolio et al., (2003) and Zaccaro et al., (2003) are highlighting the same challenges.

Findings suggest that combination of challenges in communication, information sharing and lack of transparency in tasks and work progress may cause inefficiencies but also poses challenges in trust creation.

It was found that virtual team member may feel disconnected towards the team especially when part of the team is co-located. Larger time differences were seeing worsening the feeling. Bergiel et al., (2008) also describes similar phenomena that working in different time zones may lead to difficulties in communications and delays in different tasks and scheduling. Whereas Zigurs (2003) and Bergiel et al., (2008) mentions that such discordances can create personal conflicts and frustration amongst the team members. Interviewees mentioned that if people are “alone” in their location it can be difficult to align them with others and create the team-feeling. It was considered that when people are not seeing each other they may feel less committed towards the group, and persons behind can disappear from others.

7.1.3 What are the considerations of virtual teams?

As mentioned earlier considerations in this context consist best practices and tools, skills and capabilities and trust with other relevant acknowledgments, but also few general considerations.

When comes to evaluating which tasks and type of work fits for virtual teams interviewees mentioned that mainly knowledge work. Also situations where continuation of tasks is needed around the clock, such as development or maintenance, it can fit for virtual team as they are able to handover for other team in different time zone. Findings suggest that very operational type of work or tasks where immediate support or monitoring is needed does not fit for virtual teams. This is also suggested by Joinson (2002, cited in Bergiel et al., 2003) that the virtual structure may not fit the operational environment, and industries within manufacturing may not be suitable for use of virtual team as very sequential or integrated work poses challenges. Additionally it was found that intense tasks with fast iterations that require frequent contact are easier to handle in physical sessions.

Findings suggest that regular physical meetings are important to have if possible. Interviewees mentions that when having physical expressions and ques in place people tend to communicate more efficiently, establish trust while decreasing the risk of misinterpretations. It was highlighted that especially in the beginning of task or project it is vital to have physical meeting, as

communication will be more efficient and effective after the meeting. Cascio et al., (2003) and Henttonen et al., (2005) also stresses that first team meeting, first impressions with initial messages are critical and tends to direct how team will interrelate in future. People also to engage informal talks more easily in physical meeting which in turn enhances trust and communication, this is also suggested by O'Keefe et al., (2011). Findings suggest that when message's complexity or sensitivity increases, so should the interactivity level of selected communication channel increase, where physical meeting is the most interactive.

Regular stand-up and follow-up calls or session were also seen important way to increase communication, monitor progress and create transparency. Full day workshops or meetings were seen better to handle physically if possible, as interviewees experienced that it is challenging to facilitate, get commitment and input from participants if sessions are lasting all day. It was seen also important that meetings are well prepared up front and agenda points are communicated prior to the meeting.

Interviewees mentions that virtual team needs to be well structured, roles and responsibilities ought to be clear and all the key messages should be communicated clearly and simultaneously. This supports the practices which Zander et al., (2013) recommends on different phases of team building. O'Keefe et al., (2011) also highlights that knowledge sharing and transactive memory systems are important practices for virtual teams to succeed. Clear and well establish communication but also communication ground rules were seen vital for well-functioning team. Finding is aligned with literature, in example Malhotra et al., (2004) mentions that virtual teams are seen to perform better when they have effective knowledge sharing process.

Interviewees used several different advanced information technology tools, related to Web 2.0 and more precisely enterprise social network (ESN) tools. Instant messages, emails, phone, conference video calls, common data repositories containing information and news which everyone can read and modify was seen extremely important. Web 2.0 tools as O'Keefe et al., (2011) highlights "*improves information exchange and communication within virtual teams"* and allows virtual teams to exist.

When it comes to capabilities and skills, findings suggest that communications skills were seen as one of the most important what virtual team member should have. Interviewees explained that as communication in virtual channels is lacking the benefits of physical meeting and risk of misinterpretation is evident, it is crucial that one can communicate in a clear, structured and understandable way regardless of the chosen channel. In addition to understand which channel to choose for which message, one should be able to write and articulate in way that risk of misinterpretation reduces. Zaccaro et al., (2003) and Avolio et al., (2003) also stresses that unclear communication can be a risk for virtual teams performance. According to findings, person should be very focused to sense whether someone is not understanding or is afraid to ask questions. There should be several opportunities for people to ask clarification.

Previous also relates to the facilitation and people skills, which are seen important to have. Virtual meetings can be formal, and some may feel threshold to speak up, hence the facilitator should create such environment and possibility that increases everyone's commitment and involvement. One should be comfortable with IT and be able to use several tools. This is also highlighted by Snyder (2003, cited in Bergiel et al., 2003) that there should be general knowledge among employees about the higher level technological applications related to virtual teaming.

Regards to role of trust, interviewees found that trust is important for both traditional and virtual teams. However, for virtual team it was seen that trust is more crucial. This was further explained as due to lack of transparency and being unable to monitor and being present as in traditional teams, one have to rely and trust that other will deliver and perform agreed actions with desired quality and time. Even though possibility to establish controls and check points in virtual teams to monitor progress was acknowledged, yet previous risk was seen more evident within virtual teams. Interviewees also felt that it is easier to go "hiding" and disappear in virtual team, resulting inactive and idle situation between the parties. This is well aligned with literature as Cascio et al., (2003) explains that in long run, establishing and maintaining trust is by far the same for both traditional and virtual teams, however trust's importance for virtual team is more critical. Henttonen et al., (2005) elaborates that the prescriptions which apply to traditional teams may not apply similarly towards virtual teams.

Creating and facilitating trust was found to be more challenging in virtual teams than in traditional teams. Ways to create trust interviewees highlighted that there's nothing better way to create trust than to have a good physical meeting with team-building exercises where informal talks are engaged. Even though physical meetings in some cases are not possible, informal talks were seen important, in those other are introducing their personal side beyond "work me".

Agreed ground rules and clear structures are also supporting trust creation. All above are well established in previous literature. Tuckman & Jensen's (1977) team building stages includes agreeing on roles, tasks, standard operating procedures, shared understanding which all contributes to trust facilitation, also mentioned by Zaccaro et al., (2003). Henttonen et al.,(2005) similarly emphasis that antecedents of trust for virtual teams are personal conversations, joint goals, commitment, reputation, social similarity, care and concern for the well-being of others. Findings suggest that trust will also increase after one sees that other delivers what was promised. This is in line with Mayer et al., (1995) statement "*a number of theorists have suggested that trust evolves over time based on series of observations and interactions"*.

7.2 Managerial implications

This chapter discuss and provides managerial recommendations and conclusion on virtual teams.

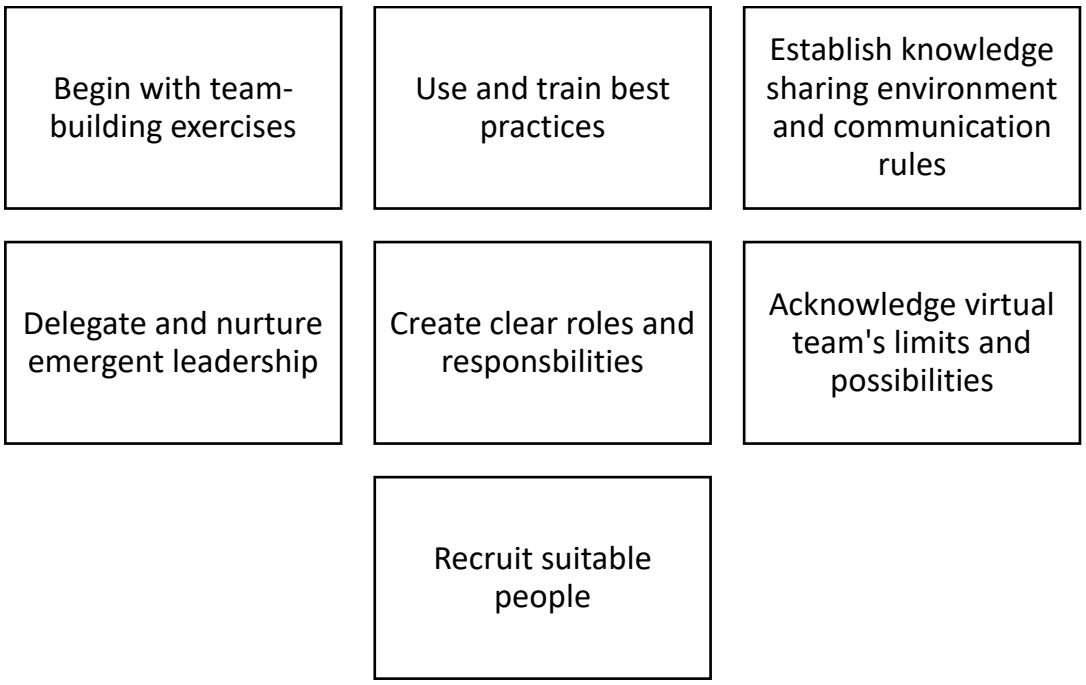

Figure 11. Managerial implications.

Start with team-building exercises and if possible conduct those in physical events to initiate building of relationships within the team. First meetings and impressions tend to have a strong impact on the direction team will take. Have emphasis on creating psychologically safe team culture. Continuously improve relational development, and enhance the trust building. Trust is vital part of well-functioning team.

Study and benchmark best practices for virtual teams. Ensure that team gets trained on the best practices, and how virtual team participation should be engaged. Do not assume that best practices from traditional teams will apply for virtual teams. Be aware of virtual team's unique considerations.

Establish and agree on ground rules how communication should be conducted, with reflections to best practices. There ought to be standards for both communication and use of channels to

reduce risk of misinterpretations. Build knowledge sharing culture and have appropriate tools and methods in place. Be a knowledge sharing role model, communicate key messages simultaneously and stress equal information sharing for all team members.

Virtual teams have often high level of autonomy and are very self-driven. Focus on the integrated people development, rather than building direct controls. Empower people and transfer authority to the team members, otherwise leader may become bottleneck for decision making and demotivate people. Nurture emergent leadership, locus of the organisational leadership is shifted from decision making to relational management.

Ensure that roles and responsibilities are clear and well communicated to the team. Remember that roles can be both task and relational ones. Team's roles, responsibilities, norms and work habits should be well structured and commonly agreed.

Acknowledge that all people are not psychologically fit for virtual teams due to the nature of work. Communication, IT and people skills are vital to have. Leader should be able to make quick and right judgments is the person suitable for virtual team work or not. Virtual work can be very independent and flexible with need for strong self-motivation, some people may require more monitoring and motivation. Acknowledge also the cultural differences when building team.

Virtual teams are not fit for all tasks and project types. Bear in mind the advantages and disadvantages of virtual teams when planning work. Picture different scenarios and have mitigation actions in place for possible challenges and conflicts. Understand also the opportunities that virtual team work brings. Maximize the good and minimize the bad.

7.3 Limitations and suggestions for future research

This chapter analyses the validity, reliability and suggests future research points. Eriksson et al., (2008, 291) explains that the classic criteria of good-quality research is measured by reliability, validity and generalizability.

Reliability of the research means that when research is replicated it gives the same findings as in previous times (Hirsjärvi et al., 2001, 186). Eriksson et al., (2008, 292) states that "*reliability tells you the extent to which a measure, procedure or instrument yields the same result on repeated trials"*. In this research the findings and their reflections towards previous research literature are largely aligned. Findings supports and confirms the previous literature's findings thus it can be considered signalling appropriate level of reliability. However, interviews and the methods how those are conducted could always be discussed and evaluated against the impact for findings.

Eriksson et al., (2008, 292) refers Schwandt (2001) by stating validity "*refers to the extent to which conclusions drawn in research give an accurate description or explanation of what happened"*. In this research findings were presented and discussed in detailed level with reflection to qualitative research literature. Hirsjärvi et al., (2001, 186) mentions that predictive validity means capability to predict future based on research findings. Virtual teams are largely impacted by information technology which develops continuously. Hence, results which apply for current state may not be as applicable in future when technology and tools develops and brings new aspects and considerations to the picture. In that sense generalizability should also be considered when applying findings in the future, meaning regular updates and confirmations should be made.

This also poses suggestions for future research as findings and their applicability ought to be reconfirmed time to time as new technology and tools are introduced continuously. For future research it would be also interesting to further explore considerations that relates to new tools around enterprise social network and other Web 2.0 tools in virtual teams. Additionally investigating how trust could be more facilitated when there is no possibility to have physical meetings, and in cases where virtual teams exist for shorter period of time (faster project and task life cycle) would be suggested.

REFERENCES

Alahuhta, M., (2015). Johtajuus: kirkas suunta ja ihmisten voima. Jyväskylä: Docendo

Aubert, B.A. & Kelsey, B.L. (2003). Further understanding of trust and performance in virtual teams. Small Group Research, Vol. 34, No. 5, pp. 575-618

Avolio, B.J., Sosik, J.J., Kahai, S.S., Baker, B., (2014). E-Leadership: Re-examining transformations in leadership source and transmission. The Leadership Quarterly, Vol 25, pp. 105-131

Avolio, J.B. & Kahai, S. S. (2003). Adding the ”E” to E-leadership: How it May Impact Your Leadership. Organizational Dynamics, Vol. 31, No. 4, pp. 325-338

Bergiel, B.J, Bergiel, E.B, Balsmeier, P.W. (2008). Nature of virtual teams: a summary of their advantages and disadvantages. Management Research News, Vol. 31, Iss 2, pp. 99-110

Brahm, T. & Kunze, F. (2012). The role of trust climate in virtual teams. Journal of Managerial Psychology, Vol. 27, No. 6, pp. 595-614

Cameron, A., Webster, J., (2005). Unintended consequences of emerging communication technologies: IM in the workplace. Computers in Human Behaviour, Vol 21, pp. 85-103

Cascio, W.F. & Shurygailo, S. (2003). E-Leadership and Virtual Teams. Organizational Dynamics, Vol. 31, No. 4, pp. 362-376

Chin, C.P., Evans, N., Choo, K.R., (2015). Exploring factors influencing the use of enterprise social networks in multinational professional service firms. Journal of Organisational Computing and Electronic Commerce, Vol 25, pp. 289-315

Cohen D, Crabtree B. (2006) Qualitative Research Guidelines Project [online document]. [Accessed 18th of February 2017]. Available at http://www.qualres.org/HomeSemi-3629.html

Cramton, C.D., Webber, S.S., (2005). Relationships among geographic dispersion, team processes, and effectiveness in software development work team. Journal of Business Research, Vol. 58, pp. 758-765

Dey, I. (1993) Qualitative data analysis. A user-friendly guide for social scientists. London: Routledge. (Cited in Hirsjärvi et al., 2001, pp. 145)

Eriksson, P. & Kovalainen, A. (2011) Qualitative Methods in Business Research. London: Sage Publications Ltd

Eskola, J. & Suoranta, J. (2008) Johdatus laadulliseen tutkimukseen. Tampere: Vastapaino

Furst, S.A., Reeves, M., Rosen, B., Blackburn, R.S., (2004). Managing the life cycle of virtual teams. The Academy of Management Executive, Vol. 18 (2), pp. 6-20

Goodman, N. & Bray, S.M. (2014) Preparing Global Virtual Teams for Success [online document]. [Accessed 10th of January 2017]. Available at https://www.td.org/Publications/Blogs/Global-HRD-Blog/2015/09/Global-Virtual-Teams-Are-We-Preparing-Our-Workforce

Hair, J., Money, A.H., Samouel, P., Page, M. (2007). Research methods for business. West Sussex: John Wiley & Sons Ltd

Henttonen, K. & Blomqvist, K. (2005). Managing distance in a global virtual team: the evolution of trust through technology-mediated relational communication. Strategic Change, Vol 14, pp. 107-119

Hirsjärvi, S. & Hurme, H. (2001) Tutkimushaastattelut – Teemahaastattelun teoria ja käytäntö. Helsinki: Yliopistopaino

Hirsjärvi, S., Remes P., Sajavaara, P. (2007) Tutki ja kirjoita. Helsinki: Kustannusosakeyhtiö Tammi

Lee-Kelley, L., Crossman, A., Cannings, A., (2004). A social interactions approach to managing the “invisibles” of virtual teams. Industrial Management & Data Systems, Vol. 104, pp. 650-657

Malhotra, A., Majchrzak, A., (2004) Enabling knowledge creation in far-flung teams: best practices for IT support and knowledge sharing. Journal of Knowledge Management, Vol 8 (4), pp. 75-88

Mayer, R.C, Davis, J.H., Schoorman, F.D. (1995). An Integrative Model of Organizational Trust. Academy of Management Review, Vol. 20, No. 3, pp. 709-734

Meredith, J.R., Mantel, S.J., (2009). Project management: A managerial approach. Hoboken, NJ: John Wiley & Sons

Nydegger, R. & Nydegger, L. (2010) Challenges in Managing Virtual Teams. Journal of Business & Economics Research, Vol. 8, No. 3, pp. 69

O’Keefe, M., Chen, E.T., (2011). The Impact of Emergent Web 2.0 on Virtual Teams. Communications of the IIMA, Vol. 11 (2), pp. 91-106

Penarroja, V., Orengo, V., Zornoza, A., Sanchez J., Ripoll, P., (2015). How team feedback and team trust influence information processing and learning in virtual teams: a moderated mediation model. Computers in Human Behavior, Vol. 48, pp. 9-16

Pinjani, P., Palvia, P., (2013) Trust and knowledge sharing in diverse global virtual teams. Information & Management, Vol 50, pp. 144-153

Rosen, B., Furst, S., Blackburn, R. (2007). Overcoming Barriers to Knowledge Sharing in Virtual Teams. Organizational Dynamics, Vol 36, No. 3, pp. 259-273

Seale, C., Gobo, G., Gubrium, J.F., Silverman, D. (2008) Qualitative Research Practice. London: Sage Publications Ltd

Tuckman, B.W. & Jensen, M.A. (1977). Stages of Small-Group Development Revisited. Group & Organization Studies, Vol. 2, No. 4, pp. 419-427

Tuckman, B.W., (1965). Development sequence in small groups. Psychological Bulletin, Vol 63, pp. 384-399

Workman, M., Kahnweiler, W., Bommer, W., (2003). The effects of cognitive style and media richness on commitment to telework and virtual teams. Journal of Vocational Behaviour, Vol 63, pp. 199-219

Zaccaro, S.J. & Bader, P. (2003). E-Leadership and the Challenges of Leading E-teams: Minimizing the Bad and Maximizing the Good. Organizational Dynamics, Vol. 31, No.4, pp. 377-387

Zander, L., Zettinig, P., Mäkelä, K. (2013). Leading global virtual teams to success. Organizational Dynamics, Vol. 42, pp. 228-237

Zigurs, I. (2003). Leadership in Virtual Teams: Oxymoron or Opportunity? Organizational Dynamics, Vol. 31, No. 4, pp. 339-351

APPENDICES

Appendix 1: Interview structure

Link to main research questions:

- What are the advantages of virtual teams?
    - Which type of work/tasks or situations you see virtual teams being more fit or has advantage?
    - When considering performance and efficiencies in work, what advantages do you see virtual teams have?
    - In general, what type of advantages/benefits do you see virtual teams have?

- What are the disadvantages of virtual teams?
    - In which work/tasks or situations do you see virtual teams being less fit or has disadvantages?
    - What kind of difficulties have you faced when working in virtual teams (e.g. that could've been less/or avoided when working in traditional teams)?
    - In general, what disadvantages do you see virtual teams have?

- What are the considerations in virtual teams?
    - Are there some specific consideration in behaviour that needs to take into account when working in virtual teams?
    - What type of considerations in communication do you see virtual team members/leaders needs to take into account?
    - Have you identified some factors or drivers that help/supports virtual teams to succeed? (Link to sub-research question 1 also).
        - Any similar ones that should be avoided

Link to sub-research question 1:

- What are the best practices and tools used in virtual teams?
    - When do you see that physical meetings are needed? Meaning which type of situations/meetings require physical presence?
    - What type of tools do you use to support work in virtual teams?
    - Are there some reoccurring or regular sessions that virtual teams should have?

Link to sub-research question 2:

- What are the capabilities and skills supporting work in virtual teams?
    - What type of skills are needed in order to succeed in virtual team (and their work)?
    - Which type of persons usually succeed in virtual teams?

Link to sub-research question 3:

- What is the role of trust, and how can it be facilitated in virtual teams?
    - How can trust be created/facilitated in virtual teams?
    - How do you see trust evolving in virtual teams (what is the evolution path)? And what it takes to evolve (what are the ingredients)?
    - What kind of role do you see trust has in virtual teams? Does it differ from traditional ones?