



Essi Vuorinen

E-leadership in virtual teams during Covid-19 pandemic

The role and skills of a leader in an e-environment

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TIIVISTELMÄ:

Digitalisaatio sekä informaatio- ja viestintäteknologian kehittyminen ovat merkittävästi muuttaneet työnteotapoja maailmanlaajuisesti. Työnteko ei ole enää aika- tai paikkasidonnaista, jonka vuoksi työtä tehdään yhä enemmän virtuaalisessa ympäristössä. Lisäksi viimeisimpänä maailmanlaajuinen Covid-19 pandemia on siirtänyt nopeasti virtuaaliseen ympäristöön nekin työyhteisöt, jotka vielä aiemmin työskentelivät fyysisesti toimistolla. Työnteon siirtyessä yhä enemmän virtuaaliseen ympäristöön kirjallisuudessa on kiinnostuttu tutkimaan virtuaalisia tiimejä.

Tämä tutkimus käsittelee johtajan roolia virtuaalisessa ympäristössä, sekä avaintaitoja jotka ovat välttämättömiä tehokkaan virtuaalitiimin johtamisessa. Tutkimuksessa keskitytään E-johtajuuden käsitteeseen ja sitä myötä pyritään myös arvioimaan johtajien teknologista valmiutta, ja sitä kuinka digitaalisia työkaluja hyödynnetään osana johtamista. Tutkimus keskittyy tutkimaan aihetta erityisesti pandemian eli viimeisen kahden vuoden ajalta, jonka aikana yrityksissä on nopeasti siirrytty etätööhön ja siten työnteko ja johtaminen ovat tapahtuneet pääosin virtuaalisin menetelmin. Tutkimuksen tavoitteena on ymmärtää, miten johtajan rooli virtuaalisessa ympäristössä eroaa johtamisesta fyysisessä ympäristössä. Lisäksi tarkoituksena on syventyä löytämään tärkeimmät e-johtajan taidot, joita nykypäivän johtajan täytyy hallita johtaessaan tiimiään virtuaalisesti.

Tutkimus toteutettiin laadullisena tutkimuksena ja siihen haastateltiin seitsemää tiiminvetäjää, jotka ovat pandemian aikana johtaneet tiimiään virtuaalisesti. Kaikki haastateltavat työskentelivät eri työtehtävissä ja useammalla eri alalla. Tämä tutkimus keskittyy analysoimaan haastatteluita abduktiiviseen tapaan yhdistäen aiempaa kirjallisuutta aiheesta sekä induktiivisesti haastatteluista päättelämällä.

Tutkimuksen tulokset tukevat aiempaa kirjallisuutta virtuaalisesta johtamisesta ja siitä, miten virtuaalinen ympäristö on muokannut johtajan perinteistä roolia sekä vaatii nyt uudenlaisien taitojen omaksumista. Tulokset osoittavat, että johtajan rooli vie enemmän aikaa ja resursseja ja vaatii siten ennakoivampaa ja suunnitelmallisempaa lähestymistapaa verrattuna johtamiseen fyysisessä ympäristössä. Lisäksi etenkin kommunikointi- ja ihmisten johtamistaitojen tärkeys korostuivat virtuaalitiimien johtamisessa. Teknologisten taitojen osalta suurin osa haastateltavista ei kokenut pandemiatilanteen ja etätööhön siirtymisen aiheuttaneen suuria teknologisia haasteita johtamistyölle, ja haastattelut osoittavat kuinka teknologian hyödyntäminen osana johtamista nähdään vielä keskeneräisenä. Lisäksi tulokset osoittavat, että vaikka virtuaalisessa johtamisessa tunnistettiin monia hyötyjä, fyysistä johtamista ja vuorovaikutusta pidetään yhä hyvin tärkeänä virtuaalisuuden rinnalla.

AVAINSANAT: virtual team, e-leadership, e-leader skills, covid-19, virtual environment

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Abbreviations

AIT Advanced Information Technology

ICT Information and Communication Technology

1 Introduction

This thesis investigates leadership in 7 virtual teams during a global Covid-19 pandemic. The first section provides the background of the study and identifies the research gaps that determine the purpose of this study. In addition, the research questions and structure of this thesis are presented.

1.1 Background of the study

Today's working life is in transition. The accelerating change in technological development and the introduction of Information and Communication Technologies (ICTs) which became popular in the late 20th century have changed the traditional ways people were used to doing their jobs. One of the biggest changes is that working is no longer dependent on a particular place or time (Contreras et al., 2020). It has become more and more usual that leaders and their followers may work from different locations, interacting via different electronic methods such as video conferencing tools and emails (Torre & Sarti, 2020). In addition to changes in jobs, advancements in technology have had an even broader impact and affected for example the attitudes and feelings of team members and their leaders in organizations (Meghana & Vijaya, 2019, p. 102).

One of the major factors that, in addition to technological advances, has contributed to the rapid change in working methods globally is the coronavirus disease Covid-19. The global pandemic that erupted in early 2020 has rapidly increased the amount of work done remotely (Contreras et al., 2020). Before the pandemic, approximately five percent of office workers worked mainly remotely. This can be compared to the current situation where the corresponding number ranges between 20 to 30 percent, slightly depending on the industry (Levanon et al., 2020). In addition, the significant impact of the Covid-19 on teleworking is reflected in the number of companies that

have reported continuing to work remotely even after the pandemic (Lund et al., 2021).

These major changes in working life have increased interest in exploring teams and leadership in a virtual context. As the result of the fact that work can now be conducted almost anywhere, the characteristics of global virtual teams have begun to be discussed. In general, virtual teams refer to teams that usually work from multiple locations, thus interacting mostly via electronic communication methods (Cohen & Gibson, 2003, p. 4). However, several specific elements and challenges arise when there are also different nationalities in the team. One of the most significant is related to intercultural differences between team members and their leaders (Dumitrașcu-Băldău & Dumitrașcu, 2019).

With regard to the leadership of virtual teams, it has been found that the traditional leadership style is no longer appropriate when the work is transferred to a virtual environment. Researchers have argued how today's leaders need to adopt new leadership skills to remain successful in a virtual work environment (Liu et al., 2018; Cortellazzo et al., 2019; Torre & Sarti 2020; Contreras et al., 2020). As a result, leadership in a virtual context is now called E-leadership, and accordingly, today's virtual leader is an "E-leader". Still, it is emphasized how the ultimate goals of E-leadership are still the same as in traditional leadership. What has changed, however, are the means to achieve these goals. (Carreno, 2019.)

Avolio et al. (2001) were one of the first who introduced the concept of E-leadership in the leadership literature. They defined E-leadership as: "*a social influence process mediated by AIT to produce a change in attitudes, feelings, thinking, behavior, and/or performance with individuals, groups, and/or organizations*". A key change compared to traditional leadership was seen in the use of technologies as part of leadership. Various definitions have since been proposed, and the topic has gradually begun to receive more attention in the literature.

Because of the increasing use of ICTs in firms, researchers are particularly interested in their impact on leadership and the leader-follower relationships. Several researchers have stated how leadership is *"currently developing through the "intermediation" of new ICTs, the presence and usage of which call for a change in the way leadership is practiced"*. (Torre & Sarti, 2020.)

1.2 The research gap

Although virtual teams are not a new phenomenon, several prior studies on the topic has focused on their impact on employees, and for example, their well-being (Vander Elst et al., 2020; Perry, 2018). By contrast, fewer studies can be found that focus on the leaders' perspective, and what changes this new work environment requires from leadership. At the same time, it has been stated how the way of leading remarkably affects on the success of virtual teams (Liao, 2017).

Moreover, even though the use of technologies in organizations has been discussed in the literature, prior leadership research has not yet explored extensively the topic of E-leadership, and the impact of technology on leadership (Torre & Sarti, 2020; Carreno, 2019; Avolio et al. 2014). Cortellazo et al. (2019) also state how despite the increasing interest in the connection between technology and leadership, and how organizations could utilize digitalization as part of their processes, no consensus has been reached on how to actually implement this.

In addition, as stated above, the new leadership skills are highlighted. Still, there is a lack of comprehensive research on what these skills are. In other words, there is little research on what is required of E-leaders so that they could effectively lead their virtual teams. Especially after the rapid spread of the global Covid-19 pandemic, the adoption of E-leadership skills is now considered particularly important. (Contreras et al., 2020.)

Overall, the global pandemic has dramatically changed today's working life and leadership in a way no one was prepared for. Because this is a new situation for all, there is no prior research on how leadership should be practiced during this crisis situation. Therefore, further research is needed to explore leadership in this new era.

1.3 The purpose of the research

As the technological development and especially the current COVID-19 pandemic have rapidly increased the amount of teleworking, and employees have had to adapt to different work environments, it is equally important that leadership is adapted to meet the needs of the virtual environment as well. Only by considering both, it can be ensured that the productivity and satisfaction of both parties do not suffer. Therefore, this study aims to bridge the research gaps described above by examining the role of virtual team leaders and the essential E-leader skills needed to effectively lead virtual teams. The aim of this research is also to evaluate how leaders have leveraged digital tools in leadership during the Covid-19 pandemic when work has moved from office to home, and communication between employers and subordinates has taken place virtually.

The scope of this research is limited to exploring the topic during the years 2020-2022, that is, from the beginning of the global Covid-19 pandemic to this day. The delineation of the study aims to provide added value to the research since the crisis situation has required relatively quick decisions, and, at least in part solutions that could not have been planned in advance.

Based on the purpose of this research, two research questions are set as follows:

- 1 How has the Covid-19 pandemic and rapid shift to teleworking affected the role of the virtual team leader?*
- 2 What are the essential E-leadership skills for effectively leading virtual teams during Covid-19 pandemic?*

1.4 Definitions of the key concepts

The key concepts of this research are: telework, virtual team and E-leadership:

Telework is defined by Gray et al. (1993, p. 2) as follows:

“Teleworking... entail(s) working remotely from an employer, or from a traditional place of work, for a significant proportion of work time. Teleworking may be on either a full-time or part-time basis. The work often involves electronic processing of information, and always involves using telecommunications.”

A virtual team is defined by Hambley et al. (2007, p. 1) as follows:

“Interdependent groups of individuals that work across time, space, and organizational boundaries with communication links that are heavily dependent upon advanced information technologies”

E-leadership is defined by Contreras et al. (2020) as follows:

“Represents the emergence of leadership in the e-environment context where the work is mediated by information technologies, high complexity and a changing working environment that makes imperative for leaders to change their practices, attitude, and behavior for long term organizational sustainability. ”

1.5 Structure of the thesis

This thesis is divided into 7 main sections. The first section provides an introduction to the study, presenting the background, purpose, and key concepts of this study. The second section defines and discusses the key characteristics of virtual teams. The section also looks at the key themes that have emerged in the virtual team literature over the past decade, and discusses virtual teams in a global context. In the third section, the concept of E-leadership is presented, followed by identifying the key skills

of an E-leader. The fourth section will provide an overview of the impact of the global Covid-19 pandemic on leadership and working.

The fifth section presents the methodological choices selected for this study. More specifically, the section consists of an introduction to the research philosophy and approach, the research design and purpose, and the methods of data collection and analysis. The sample of this research is also introduced. In addition, the section discusses validity and reliability and how they are taken into account in this study.

The sixth section presents the findings of this research. The findings are discussed in accordance to the research questions of this study, and they are compared with the observations made in the literature. The final part of this thesis provides a conclusion and summarizes the main findings of this study. Also, theoretical contributions, managerial implications and the limitations of this research are discussed followed by suggestions for future research.

2 Virtual teams

The exploration of virtual teams has been long. As digital communication methods became more widespread in the 1990s, the discussion about virtual teams also began (Liao, 2017). Still, even today, researchers note how little research is done on their effectiveness (Zeuge et al., 2020). However, comprehensive research is needed as virtual teams will become more common in the future. As stated already in 2002 by Bell & Kozlowski: *"Virtual teams are here, and they are here to stay"* (p. 45).

Virtual teams have become more common mainly as a result of technological development. The results of Virtual Teams Survey Report revealed how 85 % of participants reported being part of a virtual team at least to some extent (Solomon, 2016). In addition, the Covid-19 crisis that began in 2020, has accelerated the proliferation of virtual teams. Due to the global pandemic, many organizations that had not yet deployed virtual solutions at work, have now had to quickly adapt to the virtual work environment, at least in part (Zeuge et al., 2020).

2.1 Definition

Virtual teams have been defined in several ways over the years, but their definitions appear to highlight similar characteristics. For instance, according to Snellman (2014, p. 1251) virtual teams are: *"geographically and organizationally dispersed teams that function over time zones. Due to such dispersion, physical contact in virtual teams is reduced or lacking altogether which means that collaboration is enabled by IT solutions such as computer-based communication."* Malhotra et al. (2007), in turn, defined virtual teams as *"teams whose members are geographically distributed, requiring them to work together through electronic means with minimal face-to-face interaction. Often, virtual teams consist of cross-functional members working on highly interdependent tasks and sharing responsibility for team outcomes"*.

However, some distinct views of the definition still emerge in the literature. For instance, Kirkman & Mathieu (2005, p. 702) suggests that instead of focusing on the distance between virtual team members, the focus should be more on the means of communication. The authors note that although it is common that geographically separated teams utilize electronic tools, this may not always be the case. Hertel et al., (2005, p. 71), in turn, address how the focus should be on the virtuality aspect and the opportunities it brings rather than focusing only on the differences between traditional and virtual teams, as both teams may have similar characteristics. As can be seen, although the definitions may look similar, scholars have emphasized its message in different ways.

This will lead this research to next evaluate the characteristics associated with virtual teams, continued by identifying the key themes that have been discussed in the literature on virtual teams over the past decade.

2.2 Characteristics

Several scholars have discussed various features related to virtual teams. For instance, Cohen & Gibson (2003, p. 4) provide three characteristics they consider a prerequisite for defining a group as a virtual team. The first is related to the way communication occurs – it takes place mainly through electronic communication methods. In addition, virtual teams are designed to work together to reach commonly defined targets. A third common characteristic is that the members of virtual teams often work from different locations, which limits the amount of face-to-face interaction. In addition, because geographical dispersion is common for virtual teams, the members of the team might also share different cultural backgrounds. Therefore, multiculturalism has also been mentioned as one of the key characteristics of virtual teams (Krumm et al., 2013).

According to Morley et al. (2015, p. 189), the key characteristics of a successful virtual team include strategy implementation, technological adaptation, communication, and

the creation of an effective virtual work environment. At the same time, these characteristics can cause challenges if they cannot be taken into consideration. Different characteristics can also be viewed from various perspectives. Schulze & Krumm (2016) provide a framework to identify the characteristics of virtual team members by dividing these features into two parts- *distal and proximal*. The former includes a person's individual characteristics and experience, while the latter refers to the competencies, risks, and motivational factors. Each factor is measured from a cultural and technological perspective, as the authors consider them as key challenges associated with virtual teams.

Despite its name, however, virtual teams should not only be considered as teams who work through electronic communication methods but as teams that combine both traditional and digital working methods (Bell & Kozlowski, 2002). In addition, members of virtual teams can also work in the same location and therefore are not necessarily physically separated. As noted above, this is reflected, for example, in the current arrangements caused by the Covid-19 pandemic, when many traditional organizations are suddenly forced to work in a virtual environment. (Zeuge et al., 2020.)

Gilson et al. (2015) studied the existence of virtual teams over the past ten years and identified ten themes that have emerged widely in the studies. These themes are *research design, team inputs, team virtuality, technology, globalization, leadership, mediators and moderators, trust, outcomes, and ways to enhance virtual team success*. The themes have demonstrated representative research results, or they have otherwise received considerable attention in the virtual team literature. Therefore, the following section provides a brief overview of these themes.

2.3 Virtual teams over the past decade

There are several notable elements related to the **research design** of virtual teams over the past ten years. First, research on virtual teams is now more common in various fields and therefore not solely focused on a specific industry. In addition, the

research has been very diverse, and the topic has been studied from several perspectives. For instance, some researchers have examined the connection between technologies and virtual teams, while others have focused more on the relationships between teams. The third key trend is related to the research methods. Today, more qualitative data is being used. Lastly, in addition to students, the target groups for virtual team research have expanded, taking into account a wide range of different professions. (Gilson et al., 2015.)

The second theme, **team inputs** is related to performance of the team, which has received attention over the past ten years. Team inputs have changed a little from what they were before. The focus has shifted from more concrete elements such as competencies, age, or race to assessing for example the team and its internal relationships, diversity, and the assignments. (Gilson et al., 2015.) For instance, studies have shown how performing tasks without the knowledge of demographic factors has positive effects on virtual teams (Berg, 2012), and how the willingness to trust and work in virtual teams depends on the personality type (Luse et al., 2013).

In addition, the fast-paced nature of today's work environment is now requiring virtual teams to adopt proper technologies. Therefore, one key theme in virtual team research has been related to **technology**. Various studies have shown how there are distinct views on the impact of technology on virtual teams. In addition, new and more advanced types of technologies have begun to gain attention compared to the more traditional ones, such as emails. In relation to technologies, transformation to **virtuality** has been one of the most discussed themes during the past decade. The research has especially focused on the physical distance of virtual teams. For instance, the effects of virtuality on team members and their relationships have received attention in the literature. In this context, **trust** and trust-building have been much studied as well. Trust has been considered as a key variable especially as a result of increased virtuality and the use of technology. (Gilson et al., 2015.)

Virtuality, in turn, is linked to **globalization**. This is reflected in the amount of research conducted on virtual teams around the world. In particular, cultures and the differences between them have widely been discussed. In this context, several researchers (for example Mockaitis et al., 2012; Au & Marks, 2012) have studied the impact of culture on virtual teams. Section 2.4 related to virtual teams in an international context will focus more on this theme.

Leadership, and more specifically, the competencies of an effective virtual team leader have caused much debate in virtual team literature. Some leadership styles have been associated with leading virtual teams. Generally, it can be seen that a more people-oriented leadership style is preferred. Researchers have discussed emergent leadership styles (Hanna et al., 2021) and compared transactional vs transformational leadership styles (Ruggieri, 2009). Studies have also shown how leading from a distance is seen to have a positive effect on the relationship between leaders and subordinates by reducing the hierarchy between them (Hoch and Kozlowski, 2012).

Despite the fact that the environment surrounding virtual teams is in transition, Gilson et al. (2015) note how the factors related to this transition have received little attention. Communication, collaboration, and information exchange and their connection to conflicts have been studied mostly. Conflicts are seen to emerge more easily in a digital environment (Furumo, 2009, pp. 66) and their impacts are greater in teams working in a virtual environment compared to teams working in a traditional environment (Stark & Bierly, 2009).

Finally, with regard to the last two themes- **outcomes and virtual team success**, Gilson et al. (2015) note how the benefits of working in virtual teams are still partly unclear. The effects of virtual teams have been studied, for example, in terms of project success, because projects are typical in virtual teams. Other factors of interest include innovativeness, engagement, and a sense of well-being. The importance of training has also been emphasized due to multiculturalism, virtuality and increased use of technologies (Brahm & Krunze, 2012).

However, Gilson et al. (2015) emphasize that research on virtual teams is evolving, and the digitalized work environment is constantly providing new research topics related to virtual teams. Therefore, the authors also propose themes for the coming years that will be central in the literature on virtual teams. These include the development of digital tools and technologies, innovativeness, welfare of the team members and their internal relations.

2.4 Virtual teams in an international context

It has been noted how global virtual teams have unique features, but they are also considered more vulnerable to challenges compared to local teams (Adamovic, 2018). Of these characteristics, several researchers have highlighted cultural differences as one of the most common features, and also a challenge associated with global virtual teams (for example Dumitraşcu-Băldău & Dumitraşcu, 2019; Barnwell et al., 2014; Shaik et al., 2020).

People who work in an international virtual team environment, are exposed to several different cultural backgrounds and therefore developing intercultural skills is seen as a prerequisite for the success of international virtual teams. Intercultural skills include the ability to understand and appreciate norms, behaviors and ways of thinking that may differ from one's own. Intercultural skills make it possible to understand other people better, and thus promote working with them. According to Dumitraşcu-Băldău & Dumitraşcu (2019) *“Cultural differences should not be a barrier to communication, but an opportunity for self-development. Intercultural communication helps individuals develop their knowledge of others and their cultures and, at the same time, consolidates their own culture information”*. The virtual environment is seen as facilitating the interaction of team members from different cultures. However, people tend to be prejudiced towards people from different cultural or religious backgrounds. Therefore, to avoid this and to bring together international team members, members must have a shared goal to go towards. (Dumitraşcu-Băldău & Dumitraşcu, 2019.)

Figure 1 below illustrates how intercultural communication occurs in virtual team projects. According to the model, there are five contexts: *perceptual*, *virtual*, *microcultural*, *verbal* and *socio-relational*, which refer to the conditions in which the communication occurs. Virtual environment context means communication through ICT tools. Socio-relational context, in turn, refers to between whom communication takes place. As can be seen, cultural context surrounds the whole figure, illustrating that culture is always present in communication. The next layer, micro-cultural context represents different groupings based on cultural differences- for example in language or religion. Finally, the perceptual context includes the personal traits such as opinions and intelligence, that are influenced by culture.

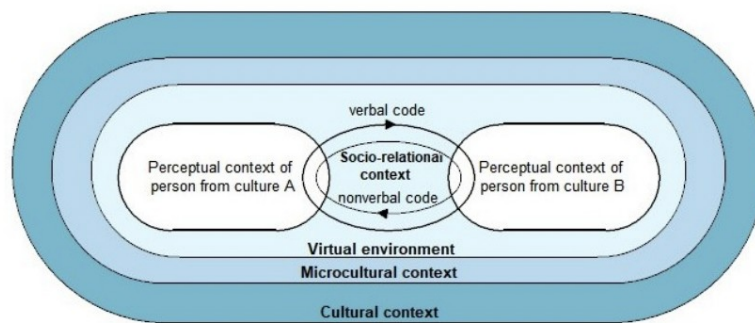


Figure 1. The model of intercultural communication in the virtual environment (Dumitrașcu-Băldău & Dumitrașcu, 2019).

2.4.1 Challenges of international virtual teams

As stated earlier, international virtual teams are more likely to face challenges compared to traditional teams. Among these challenges, distances are one of the most commonly mentioned in the literature. Distances refer not only to physical distance but also include talent distances, cultural distances, organizational distances, and social distances. Identifying these barriers is essential for business success, and helps decision-making and implementation of necessary measures to manage future challenges. (Shekhar, 2018, pp. 83-88.)

In an international context, cultural distances, or differences, are mostly highlighted. As discussed earlier, developing intercultural skills is therefore crucial. It is stated that virtual team communication in an international environment requires understanding that: *“message sent is not, as a rule, the message received”* (Dumitraşcu-Băldău & Dumitraşcu, 2019). If team members do not master these skills, there is a risk for ethnocentrism, which refers to the belief that some cultures are above others. Conflicts may arise due to the cultural differences not only in communication, but also in the styles of working, or how the instructions are understood and applied. In international projects, one of the challenges is also the language skills of the team members and the possible differences in skill levels (Barnwell et al., 2014, p. 5).

Barnwell et al. (2014, p. 4) identified several challenges associated with virtual teams in an international context. According to the authors: *“Some of the complex problems of managing virtual teams include, but are not limited to, the degrees of difference amongst team members. Such differences include distance, time separation, language barriers, cultural differences, many sites, leadership cultures and issues, information and the political environment”*. Flammia et al. (2016, p. 73) further state that the high degree of difference between team members can cause team members to be divided into separate groups according to similar cultures. This can negatively affect the group balance, and thus can be seen as disadvantageous for international virtual project teams (IVPTs). To avoid this, team members should adopt a “global identity” instead of a “local identity”. This means the ability to accept and respect other cultures in addition to their own.

Several researchers have also written about the challenges of virtual teams working in international projects (Dumitraşcu-Băldău & Căpăţină, 2020; Köster, 2010). Köster (2010, p. 118) identified the key challenges leaders might face when leading international virtual project teams. The author divided these challenges into two different categories- *internal* and *emergent*. Internal challenges refer to the risks that are caused by the leader, or the organization. These may be related, for example, to

the ability to establish an effective team and to ensure the entire team is engaged in the work throughout the project. The leader must ensure that the team has clear instructions for the assignment and that the communication is efficient. A leader must also be aware of the “predictable” challenges, meaning for example to different changes in the economy. Emergent challenges, in turn, refer to risks that cannot be foreseen, such as natural disasters or pandemics like Covid-19. In addition, in international projects, leaders must take into account the different requirements that may vary from country to country. These may relate to various rules and regulations, for example in technology (Dumitrascu-Băldău & Căpătîină, 2020).

The following chapter introduces the concept of E-leadership. The chapter presents the definition of E-leadership, discusses its characteristics, followed by the evaluation of the E-leaders’ competencies.

3 From leadership to E-leadership

The major changes in the work environment and the proliferation of virtual teams have created the need to rethink leadership as well. As stated by Kahai (2013, p. 63): *“Leadership in this context demands new understanding and new skills in addition to old understanding and skills. Most organizational leaders have yet to understand what this new context is and what it means for leadership”*. Van Wart et al. (2019) call leadership a *“social influence process”*, which in a virtual environment, is communicated through technology, and, according to the author affects the feelings, behavior, and productivity of virtual team members in a different way than in a traditional, face-to-face environment.

Over the years, leadership has been described by a number of different definitions. The latest definitions have begun to address the importance of leaders' “soft” skills. This means that the focus of organizations has shifted from purely task-oriented goals to people or relationship-oriented goals. For instance, Darics (2020, p. 6-7) suggests that in ideal leadership, both of these approaches are combined – an organization can achieve its objectives when it takes care of the people who work in it. In fact, these soft skills place even greater importance when leading in a virtual environment. Virtual leaders need not only monitor the organizational goals and maintain productivity, but also motivate and engage employees in the new digital work environment.

However, several scholars have addressed the gap in the literature regarding the utilization of Information and Communication Technologies (ICT) in leadership (for example Van Wart et al., 2017; Liu et al., 2018; Avolio et al., 2014). In response, several researchers have begun to address why the concept of E-leadership needs to be applied and understood in organizations (Carreno, 2019; Van Wart et al., 2019). The main reasons that emerge in writings are how today's leaders need to stay constantly up-to-date on the latest tools and technologies. In addition, new alternative ways of

working and the increased number of virtual teams require a good knowledge of how to utilize different electronic means.

Moreover, it has been noted how the success of virtual teams is highly dependent on the competencies and behavior of the leader (Ashmi, 2017, p. 14.) The current leadership literature emphasizes how one of the most relevant skills of today's leader is the ability to lead virtual teams in a digital work environment, and therefore technical skills are highlighted (Liu et al., 2018; Cortellazzo et al., 2019). For this reason, virtual team leaders are now called "E-leaders".

Therefore, because the use of electronic tools has become a major part of organizations today, comprehensive research on how they can, and should be utilized in leadership is needed. Therefore, the next chapter discusses the concept of E-leadership, and the new role of the E-leader.

3.1 Definition of E-leadership

As a result of the transition to digitalization and the increasing use of ICT technologies in organizations, a new definition for leadership has emerged to better describe leadership in a virtual environment. Consequently, there is a new concept called E-leadership. One of the most referenced definitions for E-leadership is from Avolio et al. (2001, p. 617) who first defined E-leadership as: *"a social influence process mediated by AIT to produce a change in attitudes, feelings, thinking, behavior, and performance with individuals, groups, and/or organizations"*. Later, the authors slightly modified the definition to take better account of the context in which this social influence process takes place. Thus, the most recent definition is: *"a social influence process embedded in both proximal and distal contexts mediated by AIT that can produce a change in attitudes, feelings, thinking, behavior, and performance"* (Avolio et al., 2014, p. 107).

Although the main difference between traditional and E-leadership is that E-leadership takes place in a virtual context, it does not simply mean the ability of leaders to apply a

variety of digital communication methods. Nor does it mean that leaders need to choose whether or not to utilize ICTs'. Instead, an effective E-leadership requires understanding to combine both digital and traditional working methods, depending on the circumstances. For that reason, a more concrete definition of E-leadership has been suggested, emphasizing that neither approach is mutually exclusive: *"E-leadership is the effective use and blending of electronic and traditional methods of communication. It implies an awareness of current ICTs, selective adoption of new ICTs for oneself and the organization, and technical competence in using those ICTs selected."* (Van Wart et al., 2019, p. 83.)

3.2 Characteristics

The concept of E-leadership has a broad meaning. However, two characteristics are especially highlighted: *technology* and *communication* (Carreno, 2019). The purpose of E-leadership is to take advantage of the technologies and achieve efficiency at each level of the organization (Avolio et al., 2001, p. 617) and regardless of this how efficiency is measured (Roman et al., 2018). On one hand, E-leadership is seen to be based as much on building and strengthening team cohesion as in traditional leadership. It can achieve as effective outcomes as traditional leadership, especially because of the variety of communication tools available today (Avolio & Kahai, 2003, p. 326-327). The goal of E-leadership is to create *"vision, direction, communication, motivation, inspiration, trust, etc"* in a similar way to traditional leadership, only the alternatives to fulfill these goals have grown (Carreno, 2019). On the other hand, some scholars see a more significant difference between face-to-face leadership and E-leadership (for example Gurr, 2004). According to the author, E-leadership requires to manage *"paradoxes and dilemmas and the associated behavioural complexity"*.

Malhotra et al. (2007, p. 60) identified the key characteristics of E-leadership that must be met in order to successfully lead teams in an E-environment. Based on the findings of their study, an effective E-leadership: 1) ensures that trust is built in an e-

environment 2) accepts dissimilarity 3) considers virtual employee life-cycle 4) follows up team performance through technologies 5) ensures transparency inside and outside the company and that, 6) it is advantageous for the members to be part of the team.

Belitski & Liversage (2019), in turn, studied E-leadership specifically in European small- and medium-sized enterprises. The findings of the interviews conducted revealed differences in the utilization of E-leadership depending on the country classification. While in developed countries E-leadership is often associated with the exploitation of technologies, results showed that in developing countries the concept is more utilized in commercialization.

As the use of technology is one of the main characteristics of E-leadership, Van Wart et al. (2017) address a few factors that need to be considered in this context. First, E-leadership should not only focus on *how* electronic means of communication are used but also on *what* tools and technologies are used. The authors emphasize the importance of leaders being able to utilize the right tools and technologies depending on the context. An important consideration is also that the choice of the right technologies depends on *who* uses them: whether it is for the leaders' own use or for the use of the team.

In this context, Liu et al. (2018) also discuss how E-leaders should consider the technological choices separately at the individual level and the organizational level. In addition, the authors argue how the utilization of technologies in E-leadership consists of two distinct parts: its deployment and use. Both are important because technology adoption does not automatically lead to its use. Based on their approach, the authors characterize E-leadership as follows: *“why and how leaders adopt technology at a personal level and at an organizational level; and why and how leaders use technology at a personal level and at an organizational level”*. However, leaders must first learn themselves what technologies to utilize and how, before they are able to commit the whole team to their use (Van Wart et al., 2016).

As can be seen, E-leadership is largely based on the skills of the E-leader. Therefore, the next section focuses on exploring in more detail what these skills are that effective E-leadership requires from leaders.

3.3 Competencies of E-leader

Since researchers have found that leadership in a virtual environment may require new and different skills than traditional face-to-face leadership, the core competencies required from effective E-leaders have also begun to attract researchers' attention (for example, Liu et al., 2018; Van Wart et al., 2019). Among the most important E-leader skills discussed in the literature, there appear to be a number of skills that are widely supported, for example, *trust and trust-building* (Savolainen, 2013; Meghana & Vijaya 2019; Avolio et al., 2001), *communication* (Darics, 2020; Roman et al., 2018) as well as *technological skills* (Liu et al., 2018; Van Wart et al., 2016). However, because E-leadership skills have not yet been studied much, there are not many existing models for representing the key competencies.

Therefore, in the following chapter, the author has chosen to focus on the findings of the case study by Van Wart et al. (2019). The reason for highlighting this specific study is that it provides a comprehensive summary of the core competencies that other researchers (for example Roman et al., 2018; Savolainen, 2013; Zaccaro & Bader, 2003) have supported in the literature as well. Although researchers may have used different terms and definitions, there are a lot of similarities between the core skills emphasized.

3.4 SEC model

Based on the findings of the case study by Van Wart et al. (2019, p. 90), the authors propose an SEC model to define the six most essential competencies required from E-leaders. The descriptions of each element: *e-communication*, *e-social*, *e-change*

management, e-team, e-technological, and e-trust are summarized in the Figure 2 below (Roman et al., 2018, p. 856).

E-competency	Description
E-communication	The leader has the ability to communicate via ICTs in a manner that is clear and organized, avoids errors and miscommunication, and is not excessive or detrimental to performance.
E-social	The leader has the ability to create a positive work environment and to improve communication and collaboration through a variety of virtual communication methods.
E-change	The leader has the ability to manage change initiatives effectively through ICTs.
E-team	The leader has the ability to build, motivate, recognize, and hold accountable teams in virtual environments.
E-tech	The leader is technologically savvy and remains current on relevant ICT developments and ICT security-related concerns.
E-trust	The leader has the ability when using ICTs to create a sense of trust by being perceived as honest, consistent, and fair.

Figure 2. Definitions of the major elements of the SEC Model (Roman et al., 2018)

3.4.1 E-communication

Already in 2002, Kayworth & Leidner stated that a leader who communicates - ask and answer questions, listens, gives direction, and comments on the performance is seen as an ideal leader in an e-environment (p.22). Today, both written and oral communication skills are often highlighted when researchers have assessed the core competencies of successful E-leaders. At the same time, those skills are considered to be one of the most challenging aspects of E-leadership (Savolainen, 2013). This is because communication in the e-environment takes place through ICTs'. According to Zaccaro & Bader (2003, p. 379), one major problem associated with communication in an e-environment is the distance between team members and their leaders. Distance is seen to increase the potential for misinterpretations and lack of communication, and, when people are working from different locations, the team is more exposed to

these issues. The authors call the problems in communication as a “*process loss*”, that can prevent a team from achieving its goals.

Therefore, to prevent communication challenges, leaders have a great responsibility to find ways to engage subordinates in regular communication in an e-environment. A successful communication is seen to have many benefits for E-team - it affects the unity of the team, fosters trust-building, and thereby influences the satisfaction of the subordinates, which in turn is reflected in good results. (Snellman, 2014, p. 1258.)

However, because communication takes place through electronic methods, it lacks some of the elements that can be implemented in face-to-face communication. Darics (2020) studied the role of nonverbal communication in a virtual setting. According to the author, written communication places greater importance on E-teams than traditional teams, because it is the only way to communicate. For instance, a leader and the team members cannot use non-verbal language or express themselves in other ways. Therefore, the study focused to evaluate strategies for how non-verbal communication is implemented in written form. Different features related to spelling and typography were studied. The results indicated that written communication strategies can be considered as effective communication elements as the non-verbal language used in a face-to-face environment. However, the author address how the results cannot be fully generalized because the strategies used should vary depending on the situation. (Darics, 2020, p. 10-11.)

3.4.2 E-social

E-social skills refer to leaders' ability to take their subordinates into account in the e-environment. It means that the leader should discuss with each subordinate on a regular basis and be able to consider their individual needs. This requires the leader to select the means of communication to be used according to the situation, meaning, for example, that different tools might be used among the team members. In addition, E-

leader must also make sure that team members use effective methods of communication with each other. (Van Wart et al., 2019, p. 92.) The social skills of the leader and the importance of taking individual needs into account are significant especially because it is possible that the leader and team members have never seen each other physically. The absence of this aspect can weaken employee motivation and engagement towards the team and teamwork. (Fernandez et al., 2015, p. 1696.)

In response to the challenges that E-team leaders may face regarding how they use their social skills, Fernandez et al., (2015, p. 1696) suggest two ways for E-leaders to foster social interaction among team members. Even in the case of a short-term assignment, which is typical in E-teams, leaders should try to allocate time at the beginning of the project so that subordinates can get to know each other first if they do not know each other in advance. It is advisable for this to happen face-to-face. It can be helpful to further implement the project virtually when subordinates know who they are working with. However, if the project has to start without the opportunity to meet face to face, leaders should organize other activities virtually that could improve team cohesion and get the team to know each other at the beginning of the project.

3.4.3 E-change

Change management skills are considered among the most essential leadership traits. Nowadays, the recruitment process is looking for a leader with innovative ideas and the courage to implement change processes in the organization. An effective leader with change management skills is *“motivated by a continuous-improvement mindset, a sense of always upgrading organizations, building better processes and systems, improving commercial relationships, increasing market share, and developing leadership”*. (Groysberg, 2014.)

Change management in the virtual environment, in other words, E-change refers to the ability of leaders to manage change in organizations using electronic methods. For

example, when new tools and technologies are introduced in E-teams, how well they are adopted in the team depends heavily on the change management skills of leaders. This is particularly important in the E-environment, where resistance to change occurs more commonly. In the case study of Van Wart et al. (2019, p. 85-86), the authors identified fifteen typical challenges related to E-leadership. One of the challenges that emerged from the study was related to the lack of change management skills. According to the findings of the study, well-implemented change management consists of three steps: 1) leaders need to get to know the new technology in advance, 2) test it before the change occurs, and then 3) collect feedback after the change has happened. Each of these steps is important because the introduction of new technology rarely succeeds immediately.

3.4.4 E-team

E-team refers to the team-building skills of the E-leader. According to the model of Van Wart et al. (2019), E-team building skill consists of three key components: 1) team motivation, 2) team accountability, and 3) team, and team member recognition. The main message of the team motivation component is that E-team leaders should strive to create a supportive working environment immediately at the beginning of the employment relationship. E-leaders need to ensure that the team members are aware of the objectives of the work and that they receive a comprehensive introduction to their work. Team accountability, in turn, refers to the E-leaders' responsibility to make sure that new team members are active and committed to their work. The final element, team and team member recognition includes ensuring that the team members are entitled to similar compensation and benefits as in a traditional, face-to-face environment. (Van Wart et al., 2019, p. 92.)

Kahai (2013, p. 76) states that E-leaders need to see more effort in building a committed and motivated team compared to teams that work face-to-face. In addition, leading an E-team requires more planning in advance, since leaders and team

members may work from different locations, and meetings, where the team gathers together, are less frequent. As the author states “*virtual team leaders need to do more in virtual teams*”. The author suggests several ways in which E-leaders can promote E-team building and strengthen the commitment to the team. These include that E-leaders plan interesting tasks for team members, assist them in their work, help them to develop their skills, and ensure the members feel they are an important part of the team (p.124).

3.4.5 E-trust

Trust and trust-building have been widely mentioned in the literature as the key skills needed in the digital environment (Savolainen, 2013; Snellman, 2014) and thus considered as critical factors for the success of virtual teams (Schiller et al., 2014). Leaders’ responsibility is to create a trustworthy work environment. Trust enables many things -it can foster organizational relationships and provide access to a variety of resources. In the e-environment, trust is affected by several factors: the means of communication and how often communication occurs, and the relationship between those who communicate. It has been also stated that trust and trust-building virtually require more effort and consideration for others compared to a face-to-face working environment. (Savolainen, 2013.)

E-leaders need to handle two kinds of processes: motivational and affective. Motivational processes are the result of creating an inspiring and reliable environment among team members, in which everyone feels supported by the team. Trust is the key factor in the implementation of motivational processes because the other objectives related to E-leadership are possible in teams where trust-building has been taken into account. However, creating a trustful E-environment is a long-term process. By contrast, the nature of the assignments handled in E-teams are often fast-paced, short-term tasks, and that is why trust-building in E-teams is perceived as challenging. (Zaccaro & Bader, 2003, p. 382.)

Therefore, even though scholars have cited trust as a key skill in the e-environment, it is also considered a major challenge for E-leadership. Hacker et al. (2019, p. 2.) discuss how trust-building is a unique competence because it allows tackling other challenges leaders may face in the e-environment. For instance, trust in a team affects the extent to which the team is able to leverage technologies. More specifically, the authors refer to the synchronicity of technologies, and how high synchronicity technologies foster trust-building. Synchronicity in this context refers to the various elements that electronic means can contain. However, in case of high mutual trust among the team members, the team is more likely to be able to overcome the challenges they may face in technology use and communication, even if the synchronism is low.

3.4.6 E-tech

Already in 2001, Avolio et al. (2001) stated that the outcome of the technology in E-leadership depends on the following factors: the type of technology used, the work environment in which it is deployed, and the organization-specific factors. The introduction of new technology can have a significant impact on leadership, either negative or positive. As stated by the authors: *“Indeed, a leadership system may co-evolve with the insertion of new technology, morphing into a new and perhaps more adaptive social-cultural system. Alternatively, inserting new technology can also destroy a social system leaving a leadership vacuum that must be addressed.”* (p. 625).

Because E-leadership is largely based on the use of ICT tools, high technical skills are necessary in order to make the most of it. (Fernandez et al., 2015, p. 1696). According to the SEC model by Van Wart et al. (2019, p. 92) E-technological skills include four main elements. First, E-leaders need to constantly keep their knowledge up-to-date on the latest technologies and communication tools because technology is ever-changing - new tools constantly appear and trends change. In fact, ICT tools are so significant today that they are called *“collaboration tools”* (Carreno, 2019.)

The second element relates to the previously discussed combination of traditional and virtual means of communication. An effective E-leader is able to combine different electronic methods effectively. The third element is a continuation of the first element, and includes the leaders' ability to manage technology-related problems that may occur, and also to help their subordinates in problematic situations. Finally, the fourth element considers the safety aspect. Leaders should always make sure that subordinates are aware of their information and its use, and seek to prevent potential privacy and security threats. (Van Wart et al., 2019, p. 82-92.)

Closely related to the use of technology in leadership is also its incorporation into the work. As discussed earlier, leaders need to ensure that subordinates are properly instructed in the use of new tools. However, there has been little discussion in the previous leadership literature about how leaders themselves adopt new technologies for leadership (Liu et al., 2018). Now, however, its importance has begun to be addressed and some models have been presented specifically to assess the adaptation of leaders to new technologies.

Van Wart et al. (2017) present the "E-leadership communication adoption model at the individual level" (shortly ECAM) model. The ECAM model has been developed to study the leaders' ability to incorporate technologies into their work. It is based on the idea that the degree of technological adaptation depends on the leaders' individual competencies, which are affected by three components: leaders' prior technological knowledge, their ability to assess ICTs', and the amount of allocated time and resources to them (see figure 3). Liu et al. (2018) studied and tested the ECAM model, and based on their findings, the model is suitable for use in assessing the ability of E-leaders to incorporate technologies into their work.

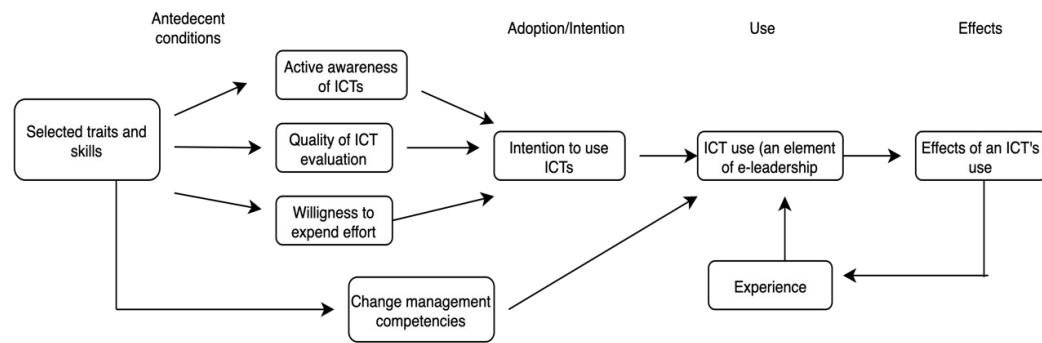


Figure 3. The ECAM model for ICT use based on E-leader skills (adapted from Van Wart et al., 2017).

The following chapter will discuss working and leadership in virtual teams in the Covid-19 context. More specifically, the chapter discusses how the global pandemic has affected work and leadership and created new roles and responsibilities for the leader.

4 Covid-19 pandemic and its impacts on working and leadership

At the end of December 2019, the first cases of the Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 in short) were reported in Wuhan City, China. By March 2020, nearly five million cases and 300,000 deaths had been reported around the world. Shortly after, on March 11th, the World Health Organization announced that the coronavirus was classified as a pandemic. (Ciotti et al., 2020.) By the end of August 2021, nearly 200 million infections were discovered worldwide (Sartelli, 2021).

The coronavirus disease, (Covid-19) has had a significant impact globally and has affected the economy, work, mobility, and also leadership. One of the biggest effects has been the shift to working remotely. As the delineation of this research is to investigate E-leadership during the Covid-19 pandemic, it is worth focusing specifically on the effects of the pandemic on working and leadership.

4.1 Virtual teams and Covid-19 pandemic

Nearly 70 percent out of 3,000 workers reported in a study by Global Workplace Analytics in 2020 that before the Covid-19 pandemic and transition to teleworking, they had never worked remotely. Unfortunately, only about one-fifth of those who participated were satisfied with the new telecommuting environment. (Newman & Ford, 2021.)

Chamakiotis et al. (2021) provide some unique characteristics associated with working in virtual teams during the Covid-19 pandemic. One of them relates to the differences in the types of work. Before the pandemic, some employees preferred to work at the office, even though they might have had the opportunity to work remotely. On the other hand, some employees worked in the office, because they did not have the opportunity to work remotely. Moreover, after the rapid spread of the pandemic and thus no time to prepare for it in advance, the technical tools as well as conditions for

telework may not have been the best possible. The extensive lockdowns around the world have also put workers and their families suddenly working under the same roof, to which no one had used to before.

Naturally, readiness for such big changes was not ideal. This new environment has been described as a "*hybrid environment*" that refers to doing work and non-work activities in the same place. On one hand, this kind of environment can blur the boundaries between work and leisure. On the other hand, the availability of virtual team members is important in order to build and maintain trust. (Chamakiotis et al., 2021.)

What has made the transition exceptional is the time used for the implementation of the new working environment. Usually, decisions about new ways of working take time to establish and get used to. However, because the coronavirus began to spread very rapidly around the globe, organizations needed to make the changes in the work environment very quickly and without the opportunity to prepare for it. Such a global pandemic was an unexpected thing, and therefore organizations did not have any ready-made solutions to rely on. (Zeuge et al., 2020.)

The sudden change has created tensions among employees and their employers. Data collected since the spread of the pandemic have shown that around fifty percent of people did not have teleworking procedures or knowledge of the use of digital technology in communication, and were also uncertain about their responsibilities. (Newman & Ford, 2021, p.1.)

4.2 Leadership during the Covid-19 pandemic

Despite previous research on virtual teams, the Covid-19 pandemic creates a need to explore virtual leadership in a new context. First, it should be noted that the pandemic has led to an increasing number of virtual teams whose members do not work under normal conditions in different locations or are from different cultures. Therefore, when

exploring virtual teams during the Covid-19 pandemic, the features typically associated with virtual teams may not be realized. Secondly, leadership in the Covid-19 context requires a more proactive and flexible leadership style. The ways leaders have worked with virtual teams may not be suitable enough to address new and even unpredictable needs of the work environment. Therefore, leaders need to become aware of the requirements of the new working environment affected by the pandemic. The authors give an example of an Internet connection, which functionality the leader should take care of even subordinates work from home. Ignoring such details can pose surprising challenges and prevent employees from completing their job efficiently. (Chamakiotis et al., 2021, p. 8)

In addition to technological developments, the Covid-19 pandemic has been a major factor in transforming the role of a virtual leader specifically into an “E-leader”. Chamakiotis et al. (2021, p. 5) discuss the responsibilities of the E-leader of virtual teams during a global pandemic. Figure 4 below illustrates these responsibilities and the relationship between virtual team leadership and Covid-19. The authors specifically highlight the importance of digital well-being and work-life boundary aspects, and note how ignoring them can risk the success of virtual teams. Digital well-being includes leaders' responsibility to select the right ICT tools for the employees depending on the context. This is important to prevent employees from the so-called “*technostress*” which can weaken their well-being while working from home. In addition, the work-life boundary aspect is specifically highlighted in the Covid-19 context, because when work is transferred home, work and leisure are often spent in the same place.

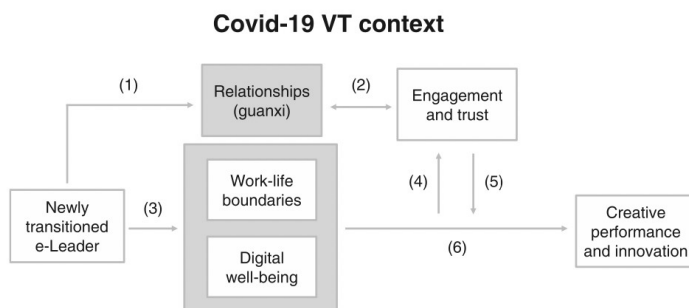


Figure 4. E-leadership in the Covid-19 VT context (Chamakiotis et al., 2021).

In addition to Work-life boundaries and Digital well-being, relationships (also referred to as *guanxi* in the figure) have been mentioned to play a significant role in the Covid-19 context (Whillans et al., 2021). Relationships are directly related to engagement and trust but deserve to be placed separately in the Covid-19 context, emphasizing the importance of social interaction between virtual team members (Chamakiotis et al., 2021, p. 6).

Altogether, these elements contribute to the innovativeness and success of E-leaders when leading virtual teams during a crisis. As can be seen, today's leaders need to adopt E-leadership skills in order to ensure the success of virtual teams. The importance of E-leadership is emphasized especially now during the pandemic when even those leaders who previously worked face-to-face have had to move quickly to work using a virtual means of communication. The global pandemic shows us that the skills of an E-leader are important not only because of the digitalization and technological advances but also in order to remain successful when working conditions change unexpectedly.

4.3 Theoretical framework

This chapter presents the theoretical framework for this study. In this thesis, the theoretical part consists of two main sections - virtual teams and e-leadership, both of which contain several subsections. The existing literature on these topics is discussed in depth. In addition to these, the third theoretical section presents the global Covid-19 pandemic, the era of which this study is limited to. In this context, virtual teams and leadership will be discussed, and how they have been affected by the pandemic.

The first part of the literature discusses virtual teams. As it is now normal that work can be conducted outside the office, more and more teams are now working in virtual teams. The section defines virtual teams and provides an overview of the themes highlighted in the virtual team literature over the past decade. In a global context,

cultural factors, in particular, have received much attention in the literature, which is why they are also discussed in more detail.

The second part of the thesis introduces the concept of E-leadership. The literature shows how this new form of leadership is needed due to the major changes in working life. In addition, the global coronavirus pandemic and the rapid increase in teleworking have also accelerated the importance of adopting E-leadership skills. According to the case study by van Wart et al. (2019) there are six main competencies of a successful E-leader: e-communication, e-social, e-change management, e-team, e-technological and e-trust. These competencies have also been widely supported by other scholars. Therefore, the model and the proposed competencies are included in the empirical part of this research. The aim is to find out what kind of competencies an E-leader needs to master in virtual environment and how the new situation has affected the competence requirements of leaders.

5 Methodology

This section will present the methodological choices of this research. The research philosophy and approach are discussed, followed by presenting the research design and methods, as well as the sample selected for this thesis. Finally, data analysis and the quality of the research are also discussed.

5.1 Research philosophy and approach

Saunders (2007, p. 101-102) defines research philosophy as *“the development of knowledge and the nature of that knowledge”*. Research philosophy can be viewed as the roof of research. It means that the choice of research philosophy affects and determines the other elements, such as the research approach and the data collection methods applied. However, the research philosophy adopted largely depends on what the researchers want to study. It also varies according to the researcher’s perception of what is meaningful. Therefore, research philosophies in studies may differ considerably depending on the type of research in question, and how the researcher experiences the process.

The three common research philosophies are epistemology, ontology, and axiology. Epistemology can be viewed as the researchers’ perception about how the knowledge is developed (Killam, 2013, p.8). According to Saunders (2007, p. 103), the views can vary according to the concreteness of the object being studied. This means that some researchers may want to study the phenomenon in a measurable way, whereas others may prefer a more abstract view. These two distinct ways of thinking represent the two sub-concepts of epistemology- positivism, and interpretivism.

Positivism relates to the above-mentioned concreteness of the study. According to a positivist view, the phenomenon under study must be concrete and measurable. In fact, positivistic studies focus purely on facts, the perspective of the study is objective,

and therefore, there is no interest in the researcher of the study. Interpretivism, in turn, represents a more abstract view. In contrast to positivism, in interpretivism the researcher is part of the research. In addition, the focus is more on humans and non-measurable elements such as behavior, feelings, and attitudes, and therefore this philosophy is often applied in qualitative research. (Dudovskiy, 2011a.) For these reasons, this thesis applies an interpretive approach.

Another key research philosophy, ontology, focuses on *“the nature of reality”*. This view concentrates on the way reality is observed. The two common ways to approach this are objectivism and subjectivism. These represent the ways people connect humans and reality. Objectivism *“portrays the position that social entities exist in reality external to social actors concerned with their existence”*. (Saunders, 2007, p. 108.) In other words, reality exists regardless of people. On the contrary, in subjectivism *“social phenomena are created from the perceptions and consequent actions of those social actors concerned with their existence”* (Dudovskiy, 2011b). According to this view, reality is not separate from people. The view requires a deeper examination of the influencing factors behind people’s decisions in order to understand their decisions (Saunders, 2007, p. 108).

The third research philosophy, axiology, focuses on ethics and value. More specifically, it can be seen as the researcher’s perception of the ethics of the research, and what the researcher considers important in the research process. Determining the value and ethics is crucial because it affects the entire writing process. (Killam, 2013, p. 6.) In the selection of the research philosophy, it should be remembered that there is no right or wrong choice. The most appropriate research philosophy depends on the type of research and its objectives. (Killam, 2013, p. 10)

In addition to choosing a research philosophy at the beginning of the project, it is also an important step to consider how the theory for the research is collected. In general, there are two main ways to approach the theory in the research. The researcher may choose a deductive approach, where the existing theory is utilized and tested. Another

alternative is to choose an inductive approach, where the researcher starts with the data collection and derives the theory based on the observations made during the process. (Saunders, 2007, p. 117.)

As can be seen, these two approaches differ quite considerably. However, there is a third alternative as well, which combines both inductive and deductive approaches. This is called an abductive approach. The abductive approach cannot rely only on theories that are already available. Instead, it seeks to investigate a set of emerging observations and proceeds to the most probable explanation of those observations. Therefore, an abductive approach questions the above-mentioned inductive and deductive approaches. (Dudovskiy, 2011c.) This research utilizes an abductive approach because it combines elements from both an inductive and a deductive approach.

5.2 Research design

Research design can be considered as a roof for the entire research. It determines how the research will be conducted, and therefore includes all the steps of the research process from defining the topic, gathering and analyzing the data to finalizing the study. There are three common types of research design: *exploratory*, *descriptive*, and *explanatory*. (Akhtar, 2016, p. 68-70.)

The purpose of exploratory research is to investigate a topic in order to find out something new. In exploratory research, a problem already exists, but the researcher is willing to explore it in more detail to gain a better understanding of it. This research design is often applied when there is no prior in-depth research on the topic. By contrast, explanatory research design investigates a completely new phenomenon. It aims to investigate the connection between two research variables. The purpose of explanatory research is also to question the subject under investigation and thus get an answer to a “*why*” question. Descriptive research, in turn, seeks to explain the research variables as accurately as possible. It can be used, for example, to study the

connection between a demographic variable, emotion or opinion, and a research variable. (Akhtar, 2016, p. 75-78.) This thesis is exploratory research as it aims to gain a better understanding of leadership in an e-environment, as well as the effects of virtual work on leaders' skill requirements.

An important part of the research design is also deciding whether the research is intended to investigate a topic in one specific time, or over a period of time. The first refers to a cross-sectional study, which is often applied when there is a limited time assigned to the research, or when the research investigates a certain case. Longitudinal research, in turn, investigates the phenomenon within a longer time frame. This type of study is seen as beneficial as it allows to study patterns in research variables. (Saunders, 2007, p. 148.) Due to time constraints, this thesis investigates a specific topic at a specific time, and therefore, this thesis is a cross-sectional study.

5.3 Research method

In addition to selecting the research design, the researcher must choose how to collect and analyze the data. There are two main methods on how the data can be collected and analyzed. These are quantitative or qualitative methods. The selection between quantitative or qualitative research methods should be done based on what is being studied. When the researcher is interested in obtaining numerical data as the results of the research, a quantitative research method is a more appropriate research method. In contrast, when more abstract elements such as a person's attitudes, motivations, or behavior are being evaluated, the researcher may apply a qualitative research method. (Saunders, 2007, p. 145.) In addition, other characteristics that distinguish these two research methods are sample size and the data collection methods. For instance, different types of surveys are popular in quantitative research whereas in qualitative research, interviews are often used. (Sage publishing, 2021.)

If the researcher uses only one research method, the study is called mono method research. However, sometimes the researcher may apply several quantitative or

qualitative research methods in the study, in other words, multiple methods are applied. It is also possible to mix both quantitative and qualitative methods in the same study. In this case, the research applies mixed-method research. (Saunders, 2007, p. 145.)

Because the aim of this research is to investigate leaders' experiences and opinions, the author has chosen to apply a qualitative research method.

5.3.1 Data collection

Data can be collected from primary and secondary sources. Primary sources refer to original sources, from which the researcher gathers new information. Therefore, primary data is referred to as gathering "first-hand information" which can be done, for example, through interviews. Secondary data, in turn, refers to the data that has already been gathered in the past, and that the researcher can then utilize in his own research. Examples of these can be various company reports. Secondary data can also include information that is not available in primary sources. (Krishnaswami & Satyasprasad, 2010, p. 86).

This research utilizes only primary sources. More specifically, it applies interviews as a data collection method. Interviewing is seen as an effective data collection method because, in addition to listening to the words, it allows evaluating other things at the same time. Examples of these may be the interviewee's gestures, expressions, and tone. Other advantages associated with interviews include the ability to gather a large amount of high-quality information and to avoid potential challenges related to the data collection. Interviewing also allows for obtaining additional information in addition to pre-planned questions. (Krishnaswami & Satyasprasad, 2010, p. 99-101).

There are several types of interviews. Generally, these types are classified as structured, semi-structured, or unstructured interviews. Structured interviews are

often used in quantitative research, for example in questionnaires. In this research method, respondents need to select their answers according to pre-defined alternatives, giving them no chance to justify their selection. The researcher is interested in obtaining quantifiable data. By contrast, unstructured interviews refer to an informal type of interviews, in which there are not many pre-defined questions planned in advance. Instead, the researcher allows the conversation to proceed freely. This type of interview gives interviewees a chance to choose the direction of the conversation and to *“tell their story”*. Semi-structured interviews have features from both structured and unstructured interviews. In this interview type, the researcher has several pre-defined interview questions, in addition to which some additional questions may be asked during the interview. The researcher is familiar with the topic to some extent in advance but is willing to ask questions to gain a deeper understanding of it. (Gubrium et al., 2012, p. 194.)

In this thesis, semi-structured interviews are used. This type of interview is chosen because of the author’s willingness to create an atmosphere in which interviewees can freely express their opinions and thoughts outside of the interview questions as well. Therefore, in addition to several pre-defined questions, the author may ask some additional questions depending on the conversation and the willingness of the interviewees.

5.3.2 Sample

For this thesis, the author interviewed 7 team leaders. Each team leader have led their teams remotely during the pandemic. In addition, to gather different views and compare the findings, leaders from various industries were selected. Each interview was conducted remotely through Zoom and Teams due to the prevailing pandemic situation. The length of each interview varied between 30 to 45 minutes. As stated earlier, the confidentiality of the respondents has been protected in this thesis and therefore, the identities of the interviewees or information of the companies are not

disclosed. However, some general information about the interviewees can be found in Table 1.

Table 1. Information about the interviewees.

Participant	Gender	Role	Length of interview
Interviewee 1	Female	Team leader, HR	41 minutes
Interviewee 2	Male	Director, Finance	30 minutes
Interviewee 3	Female	Client Service Manager, Insurance	31 minutes
Interviewee 4	Male	Vice President & Project Manager, IT	35 minutes
Interviewee 5	Male	Vice President, IT Consulting	41 minutes
Interviewee 6	Male	Director, Construction	45 minutes
Interviewee 7	Female	Product Owner, IT	30 minutes

5.4 Data analysis

After collecting the data, the next step is to transform and analyze it thoroughly- to discover new information related to the research topic. Eriksson & Kovalainen (2016, p. 119) define qualitative content analysis as: *“the ways of analyzing the content and meaning of different types of qualitative data.”* Therefore, in qualitative content analysis, the researcher is interested in the content and the meaning of the data and seeks to understand what was said, how it was said, and why. This data analysis is suitable for analyzing various types of qualitative data, such as interviews, written documents, and recordings.

Qualitative content analysis is usually done by either categorizing or interpreting the data. Categorization is used to evaluate the content *“in a manner that provides a general and holistic picture of the phenomenon under study”* (Eriksson & Kovalainen, 2016, p. 122). Coding is an important part of categorization. Coding refers to analyzing keywords, sentences, and themes from the data. For coding, a coding scheme will be

created. This means creating a set of categories that are developed from the theory and the data collected. Then, the interview data can be coded into these categories. An effective coding divides each finding separately into its own category. Finally, these categories show common themes and patterns derived from each interview, based on which interpretations can be made. (Eriksson & Kovalainen, 2016, p. 119)

In this thesis, the data collected from interviews were recorded. Interviews were conducted in Finnish, as it was the mother tongue of each interviewee. Permission to record was asked at the beginning of each interview and interviewees were aware of the anonymity of the interviews. Notes were also taken during the interviews. After each interview, recordings were manually transcribed into a textual form in order to better categorize the data. After each interview was transcribed, transcribed texts were organized according to selected categories to identify the similar themes and patterns.

5.5 Reliability and validity

The aim of every research is to get as accurate results as possible. However, the researcher cannot be completely sure of the correctness of the results. With a good research design, however, the probability is higher. Therefore, every research should focus on two aspects – the validity and reliability of the research, in order to reduce the possibility of inaccuracy. (Saunders, 2007, p. 149.)

Reliability of the research refers to the consistency of the research results. When evaluating the reliability of the research, the researcher can think whether similar findings would appear if the research was conducted again or by another researcher (Saunders, 2007, p. 149). Due to the time constraints, this was not possible in this research, but other considerations were taken into account to receive as reliable research results as possible. For instance, the interview process was explained in detail

to respondents, the data was recorded and transcribed word by word, and direct quotations were used to increase transparency.

However, there are several possible subject and participant errors and biases that can occur and affect the reliability of the research when collecting the data. The errors can be related to the differences in the research results depending on the date or time. For this reason, the author sought to conduct the interviews at a reasonable time and allowed the respondents to influence the time of the interview. The bias, in turn, can occur if the respondent does not answer honestly in the study. In addition, the way or tone the interviewer asks questions may also affect how the respondent answers the questions. (Saunders, 2007, p. 149.) This was taken into consideration in this study by keeping the neutrality when asking questions, and thus not showing the author's own opinions for the respondent.

The validity, in turn, refers to "*whether the findings are really about what they appear to be about*" (Saunders, 2007, p. 150). In other words, validity is related to the extent to which a study measures what it was intended to measure (Bengtsson, 2016). Ensuring validity is more challenging in qualitative research, but it was taken into consideration by sending the interview questions to each interviewee in advance, and ensuring that they were understood correctly. During the interviews, the author ensured that the respondents understood the topic and the questions, and also encouraged them to ask if anything was unclear.

The next section will focus on the results of this research. The findings will be presented and compared with the theoretical part of this research.

6 Findings

This chapter represents the empirical part of the study. The chapter discusses the findings of the interviews and evaluates how they are connected with the theoretical part of the study. The aim of this thesis was to examine the role of leaders and evaluate the key e-leadership skills needed in the virtual work environment. The study focused specifically on assessing the topic in the era of the global Covid-19 pandemic, during which virtual work has grown significantly in a short period of time and affected even those fields and occupations where work has mainly been done in the office. Altogether 7 interviews were conducted to find out how the leaders have adjusted to a virtual work environment and what kind of E-leadership skills the new situation requires.

This chapter has been divided into two main sections along with the research questions of this study which were:

1 How has the Covid-19 pandemic and rapid shift to teleworking affected the role of the virtual team leader?

2 What are the essential E-leadership skills for effectively leading virtual teams in the virtual environment?

6.1 E-leadership in virtual teams during the Covid-19 pandemic

6.1.1 Leaders' previous experience of working in virtual teams

At the beginning of each interview, the participants were asked about their previous experience of working in virtual teams. Each participant had at least some previous experience. However, the findings show how there were quite large differences between participants in terms of past experience, as can be seen in the following statements:

I have not worked in virtual teams much before the pandemic, so I could say that it mainly started in February 2020 when the pandemic also began. (Interviewee 1)

Well, I have led projects that are being done on average in five different countries and there are 3-4 locations in those countries. Therefore, there is little new to me in virtual work. (Interviewee 5)

Based on the interviews, those leaders who work in global teams were more used to virtual work. Some participants with little experience reported how virtuality had been part of the work before as well, but due to the pandemic, its volume has now grown significantly. However, despite the amount of past experience, what was common for all participants was that now during the past two years of the pandemic, each team has mainly worked remotely.

6.1.2 The new role of the leader

With regard to the role of the leader, the findings clearly show how new elements have come into the role of leader during the pandemic period and with the transition to teleworking. The new situation has set new skill requirements for leaders, as was noted in the literature. The literature suggested how new leadership skills are needed to operate effectively in the e-environment, and how the skills are different from those required in a traditional environment (Liu et al., 2018; Cortellazzo et al., 2019; Torre & Sarti 2020; Contreras et al., 2020).

Overall, according to the interviewees' comments, one of the main changes to the past is related to how much more effort and time virtual leadership takes compared to leading in a traditional, face-to-face environment. When asked how the new work situation has affected the roles of the leaders, similarities were clearly observed in the answers. The majority of the respondents reported how the new situation has led to fully booked calendars and extended working days.

Well, what has probably changed the most is that my role takes 20 to 30 percent more time (Interviewee 4)

At the same time we switched to this teleworking my calendar became fully booked. At worst I have 10 to 15 half-hour Teams meetings a day. So there is no longer room for any ad hoc discussions, it is simply doing business (Interviewee 5)

In this context, the effects of limited time and resources were seen as a lack of spontaneity, innovation and creativity, for example.

What hurts me is the lack of inspiration. It (working) becomes more of a compulsion. Being over-correct, it kills the creativity (Interviewee 6)

In addition, the findings show how virtual leaders need to be more active in their role than before and pay more attention to details, especially in communication which occurs mostly through the electronic means. In this context, the majority of the respondents reported that their role was most affected by the lack of non-verbal communication. The impact of the pandemic on the communication skill requirement of leaders will be more discussed in section 6.2.

I need to be more active as a supervisor than before. I am more active in contacting the team members and asking how they are doing in addition to the weekly meetings. This has been an integral part of my leadership and in addition to this, I have of course encouraged people to contact each other. So that is at least what I have tried. (Interviewee 3)

Regarding this new role of the leader, the interviewees also emphasized the importance of the “soft” or people skills. Some participants felt that when work is transferred to a virtual environment, leadership becomes easily more matter-oriented when the time to discuss with people is limited. In general, leaders felt that it is more difficult to know how people are doing. All respondents agreed that the virtual environment requires a particular focus on people-centered leadership- that is, the ability to understand people and their differences. The literature supports these

findings. Studies on virtual teams over the past decade showed how people-centered leadership styles have often been associated with virtual teams and leadership (Hanna et al., 2021) and how these soft, or people skills are even more important when the work is done virtually (Darics, 2020).

I might go to the soft side. You need to be genuinely interested in how that person is doing. Of course, you ask how is the work situation but in addition to that, I ask how the weekend went and other non-work-related things. So this work situation definitely requires a softer approach, because people may be at home in such different situations. (Interviewee 3)

In this context, all respondents mentioned some challenges they have faced in their role in leading virtual teams during the pandemic. When leadership and work are transferred to a virtual environment, there are fewer natural encounters between leaders and their followers. Based on the interviewees' comments, it can be seen that before the pandemic, much of the leadership itself was successful simply by meeting people face to face. In other words, leadership did not require as much planning in advance and a proactive approach as it does now. As one interviewee stated, “managing by walking” is no longer possible.

To lead people, to read and understand them, you have to focus in a completely different way. It no longer succeeds with experience and spontaneously, you have to interpret different signals. (Interviewee 4)

These findings are in line with the earlier observations. Earlier, Chamakiotis et al. (2021) discussed the new role of the leader in Covid-19 context and identified several responsibilities of E-leader. According to these findings in the literature, virtual leadership requires now a more proactive and flexible leadership style than before, to respond to the new and unpredictable needs of the new working environment. As seen, proactivity also emerged in the interviews. However, it can be seen how leaders still face challenges in adopting this new leadership role and understanding what the leader needs to consider and perhaps change when leading in the virtual environment.

Still, respondents' statements show how regardless of the pandemic situation and challenges it has set for virtual teams, E-leadership during the pandemic has been relatively successful, and the teams and leaders have adapted well to a new virtual environment. The majority of the respondents reported on how they have been able to maintain a good team spirit despite the fact that the team does not physically work together. Leaders feel that their team members have taken responsibility for their own tasks well and that subordinates' initiative to work has increased during the pandemic.

6.1.3 Virtual leadership in global teams

As the literature shows, globalization, and technological advances have contributed to the fact that more and more of today's virtual teams have international experts. Global virtual teams and their unique features and challenges have widely gained scholars' attention (Shaik et al., 2020). Therefore, in this section, the author was especially interested in exploring how the global pandemic may have affected global virtual teams that have international experts working from multiple locations. The purpose was also to evaluate the previous international experience of leaders and gather their opinions on what they consider as the key opportunities and challenges of global virtual teams.

In general, all participants had some previous experience working in an international team. A few participants were also currently working in leadership positions in global virtual teams. Based on the interviews, the majority of the respondents considered the ability to hire experts regardless of where the person is physically being located as the main benefit of global virtual teams. Although this has been possible before the pandemic as well, the findings show how the pandemic has increased its volume, and the opportunities of global virtual teams are now being better exploited.

The same situation existed before the pandemic, but now I think it has broken the bank. There has been a change in mindset during the pandemic (Interviewee 5)

Overall, those team leaders who currently work in global teams highlighted the importance of travel and meeting international team members in person. In fact, according to the global team leaders, lack of travel has been one of the major factors affecting global teams and teamwork during the pandemic.

Because there are so many people who have not seen me before, I am forced to spend two weeks there and take clients there with me. In international matters, what breaks that ice is that we see each other. (Interviewee 4)

However, as travel has been limited or completely excluded option during the pandemic, the current situation has now forced leaders to find other solutions to work effectively. The results show how working remotely has brought new insights and alternative ways of doing things, and leaders have found benefits in reducing travel. Some of these advantages of working without traveling were, for example, related to significant savings in travel expenses.

In addition, travel was seen to be more important at the beginning of the teamwork. When the team already know each other, the importance of travel and meeting face to face decreases. Therefore, the findings show that the new situation and lack of travel have made leaders realize that when the leader and team are already familiar with each other, many things can be handled as effectively without traveling. Literature also supports this finding. Fernandez et al. (2015, p. 1696), highlighted the importance of face-to-face interaction at the beginning of teamwork. This was seen as especially important in projects, and if the team members do not know each other in advance. Social interaction at the beginning of the project was seen to foster virtual work in the future.

But it will change the fact that certain things can be done remotely, which in past were things that you thought you need to travel. You do not need

to travel if you know the people... if you have the same people, it does not make sense to travel every month. Then it is enough go go there every two or three months to meet them. These are the opportunities technology brings. (Interviewee 4)

In addition, the impact of culture on global virtual teams was also raised in the interviews. In the literature, cultural differences were highlighted as one of the most common features of global virtual teams. At the same time, it was noted how intercultural differences can set challenges for global teams whose members work physically apart and communicate only through electronic means (Dumitraşcu-Băldău & Dumitraşcu, 2019; Barnwell et al., 2014 & Shaik et al., 2020). In the interviews, one of the observed advantages of having different cultures among the team was related to the ability to share knowledge and understanding. Working in a global virtual team allows leaders to meet people working in a similar role elsewhere.

It is an opportunity to understand the difference and similar challenges that supervisors around the world face. It is important to share your knowledge and understanding. (Interviewee 3)

In addition to the benefits, some cross-cultural challenges related to working in global virtual teams were also identified. These were related to the differences in the ways of working. According to the global team leaders, the more differently two cultures are used to working, the more challenging it is to make things work in the virtual environment. In addition, to overcome these challenges, leaders highlighted the importance of developing intercultural skills to understand different cultures and ways of working. These findings were also observed in the literature. It was noted how different styles of working can negatively affect teams and teamwork in international projects (Barnwell et al., 2014, p. 5). Literature also emphasized the importance of developing intercultural skills. Those skills were seen as a prerequisite for working effectively in global virtual teams (Dumitraşcu-Băldău & Dumitraşcu, 2019).

Still, the results show how despite the current situation has made leaders realize that many things in a global team can be now handled without traveling, E-leadership still

cannot fully replace face-to-face leadership and the benefits observed when meeting people physically. Based on these results, it can be concluded that in the future, it is possible that travel will decrease to some extent also in global teams, but it is still likely that face-to-face encounters will continue to take place on a regular basis.

6.2 The key E-leader skills needed in the virtual work environment

In this section, the purpose was to find out what kind of new skill requirement the new work situation and the pandemic era has set for leaders. The case study by Van Wart et al. (2019) and the six proposed competencies in the SEC model were used as a basis for examining the new skill requirements of leaders, in addition to which leaders were free to express their thoughts on the most important competencies.

Overall, it can be seen how the findings support most of the proposed E-leader competencies by Van Wart et al. (2019). The skills considered essential were closely related to the skills included in the SEC model: *e-communication*, *e-social*, *e-change management*, *e-team*, *e-technological* and *e-trust*. Communication, social and trust-building skills were especially highlighted in the interviews. These skills were also previously supported in the literature and considered the most important skills to master in the role of E-leader (Savolainen, 2013 & Roman et al., 2018). Overall, these skills were more emphasized in the interviews than, for example, technological or change management skills.

6.2.1 Communication, social and change management skills

When participants were asked about communication skill requirements, everyone agreed on how remote working during the pandemic has affected the communication requirements of leaders. Clear and continuous communication was clearly emphasized in the answers. Leaders need to be especially careful about how they communicate

with their subordinates. This is because, in the virtual environment, leaders are more likely to be misunderstood in their communication. The possibility of misinterpretations and the distance between leaders and their subordinates were also identified in the literature as the key communication challenges in the virtual environment (Zaccaro & Bader, 2003; Savolainen 2013).

In my opinion, the most important skill here is the communication and interaction skills. When you have different personalities on the line, how do you make sure that you respond everyone so that nothing is misunderstood. Or take a word or breathe wrong. (Interviewee 1)

In addition to clear and continuous communication, the importance of presence and authenticity in communication was also highlighted. This was reflected, for example, as an increase in meetings and one-to-one discussions within the team during the pandemic. In addition, the majority of respondents stated how in addition to being interested in work-related matters, in the virtual environment, it is especially important to ask about non-work-related things as well. This is because the virtual environment does not offer the opportunity to discuss other than work-related issues in the same way. Those natural conversations that people were used to at the office are left out in the virtual environment. This finding was also discussed earlier in the literature. It was suggested that in order to avoid communication challenges, leaders need to find ways to ensure regular communication with their subordinates. It was seen how regular communication affects team spirit, trust, and thus the satisfaction of people (Snellman, 2014, p. 1258).

In addition to oral communication, some respondents highlighted how clear and comprehensive written material is an essential part of communication in the virtual environment. As an example, leaders need to pay more attention to making their communication material appealing. In addition, the material needs to be clear and comprehensive. This is due to the lack of spontaneous and non-verbal communication and the ability to ask questions and interact in the same way as in a traditional face-to-face environment.

People use your materials in a completely different way than before because they are the source of memory. When they cannot ask you, they return to your materials, which means that your material needs to be clear and when you present them, they need to be visually good as well. (Interviewee 4)

This finding was also supported by the literature, which highlighted the importance of written communication in virtual environment where verbal communication is limited. The study evaluating the effectiveness of written communication compared to oral communication showed how consistent and well-planned written communication can be as effective as non-verbal communication if the right strategies to utilize it are known. (Darics, 2020).

Talking and going through the material during the presentation is less important here. Of greater importance is that the material is prepared in advance. In a way, this kills the creativity, but of course, it is more accurate. (Interviewee 6)

The second E-leader skill was related to leaders' social skills. Leaders were asked how they consider that leading virtually during the pandemic has affected their social skill requirements. Earlier, literature highlighted the importance of E-leaders' social skills, which place greater importance in the e-environment where it may be more difficult to identify and support the individual needs of subordinates (Van Wart et al., 2019). Based on the results, more effort is needed to take care of employees and their individual needs in the virtual environment. In this context, leaders highlighted advance planning as well as utilizing the right methods to interact with subordinates. Some leaders reported how even a certain degree of discipline is needed to ensure that everyone is heard and to avoid the situation where only extroverts contribute.

Different methods were used by leaders to take care of the team members. For instance, some leaders had decided to allocate a certain amount of time to each subordinate in meetings so that everyone is able to express their thoughts and opinions. Many respondents also mentioned the use of videos as a good solution to

see how the team members are doing and also help the leader to identify the potential issues that should be addressed. Earlier, literature also emphasized the importance of having social skills and finding the right methods to keep employees motivated and engaged in the virtual environment (Fernandez et al., 2015, p. 1696).

So we have now such a practice that we have the cameras on and I give turns to everyone to speak so that everyone gets the contact on us and is able to tell how he or she feels. They can share what they want, some may speak more and some less, but everyone is given the opportunity to tell their thoughts and to be heard. (Interviewee 3)

However, according to some respondents, the challenge is seen to be that a particular way of communicating may not be suitable for everyone in the team. Therefore, the leader must also recognize differences in the desired ways of communicating on an individual basis. Here, again, the soft skills of the leader are emphasized. This was also addressed in the literature. It was seen how e-social skills require knowledge of the choice of means of communicating according to the situation and individual preferences (Van Wart et al., 2019, p. 92). The following statements reflect these findings and what kind of social skills the E-leader needs to master:

Everyone is not okay with asking a question in a big group chat or that I inform about things through different platforms. Therefore, the leader is required to have a sensitivity and understanding of how everyone wants to work and how they can be supported. (Interviewee 1)

If you know the people, you know their strengths and weaknesses. So you must be able to support that in the virtual environment. In my team, if I ask someone to do something, I need to know how she or he takes it. I could say the same thing to someone else differently. I think this is challenging. And we also have new employees in our firm. You do not know them and their personalities. (Interviewee 6)

Closely related to leaders' communication and social skills, leaders were asked about their change management skills. The author was especially interested in exploring the potential impact of the pandemic and virtual working on the change management skill requirement of E-leaders. In the literature, it was noted how resistance to change can

happen easier in the e-environment, and how change management is seen among the key challenges of E-leadership (Van Wart et al., 2019, p. 85-86). As regards E-change skills, similarities can be observed from the interviewees' statements. A continuous and clear communication, justification, and involvement as well as efficient use of technologies were highlighted as the key factors in managing change in the e-environment. The following comment shows how important the involvement of subordinates during change is in order for change to be accepted and understood in the virtual environment.

Involvement during the change is important in order to get people to understand that they want this change and that they are the agents of that change and not just the objects of change. (Interviewee 3)

Overall, as can be seen from the answers, the findings on change management skills clearly highlighted the communication skills of the E-leader. According to the interviewees, change management in a virtual context requires more repetition in communication. Overall, in the e-environment, a more proactive approach from leaders to many issues is often needed. This also applies when managing change. As one of the interviewees stated:

The question of what the change means must be answered even if no one has asked it. (Interviewee 5)

However, despite the greater need for communication when leading change in the virtual environment, the responses show how there is still not much difference between leaders' change management skills in a traditional and virtual environment.

6.2.2 Team-building, technological and trust-building skills

As the fourth skill, leaders were asked about the team-building skills of E-leader, and how team-building in virtual environment may differ from team-building in a

traditional, face-to-face environment. The author was especially interested to know whether leaders had organized additional team-building activities during the pandemic to maintain a good team spirit when everyone is working remotely.

The findings show how the pandemic situation has required leaders to rethink ways to maintain team cohesion in virtual teams. All respondents agreed that team-building is more challenging now when the work is transferred to a virtual environment and there are no natural encounters. This finding is in line with the observation made in the literature. Earlier Kahai (2013, p. 76) noted how E-leaders need to see more effort for team-building and keeping employees engaged and motivated when people are working in different locations and face-to-face meetings are limited.

One big challenge is developing and maintaining team spirit. And it does not work if you sit on your computer, chat and share some slides. It requires that we do teamwork together. (Interviewee 6)

However, the findings show how there has been a lot of variation in teams as to whether extra activities had been organized during the pandemic. Some leaders reported having organized so many activities that it is difficult to come up with new ones anymore, while some other teams have only increased the number of virtual team meetings. Based on this interview sample, it can be seen that international virtual teams had organized more extra activities during the pandemic compared to local teams. This may be related to the fact that global teams have not been able to travel and meet each other as often as local teams. As noted earlier, travel was seen as a vital part of global teams. However, now during the pandemic, the opportunity to travel has been significantly reduced and some global teams have not been able to meet each other at all. Therefore, based on statements of the global team leaders, it can be concluded that this new situation has required them to make an extra effort to maintain team cohesion within teams.

Normally we have a constant travel rotation going on. So now I have had to think about different virtual team events. I am so full of thinking

and organizing what you can do for big teams. Online games, stand-up shows, and so on.. so as regards team-building now, you have to use ways you have never used before. (Interviewee 4)

In the literature, it was also noted how technology is one of the two main characteristics of E-leadership (Carreno, 2019). Even though the main goals of leadership have not changed, one thing that distinguishes E-leadership from traditional leadership is the alternatives the leader can utilize when fulfilling these goals. E-leadership included the awareness, adoption as well as technical competence for utilizing information and communication technologies, ICTs (Van Wart et al., 2019). Therefore, as technology is considered an integral part of E-leadership, and the technological skills were presented as the fifth competency requirement of the SEC model, leaders were asked about their technological skills. The purpose was to evaluate whether the pandemic situation and remote working have set new technological competency requirements for leaders, and how they are currently utilizing technologies in leadership.

Before the new technological skill requirements were discussed, the author was interested in the participants' prior experience in utilizing technology as part of leadership. Each participant reported that they had used technologies before the pandemic to some extent, some leaders were more experienced than others. However, the majority of the participants agreed that its volume and use had been significantly lower before the pandemic. Technology was mainly used for communication and as a channel for discussions.

The findings show how there are differences in what kind of new technological skill requirements the new work situation has required from leaders, and how leaders themselves have adopted different digital methods as part of leadership. Majority of the respondents did not see any challenges related to the introduction of new technologies or communicating only through electronic means, while some others felt that the situation has required a lot of new technological know-how. Generally speaking, differences can be seen depending on the field in which the leader operates.

Based on the results, leaders working in IT sector considered the use of technologies in leadership as a lesser challenge than leaders working in other sectors. In addition, the findings also show that those leaders who use more technology in their day-to-day operations experienced this new situation as less challenging.

This is interesting because technological skills, have had to be developed a lot, and it is not just as being supervisor but also working virtually, how you present information, where you share information.. this is a classic example that we have some particular work that we go through among the group. Technologically this is going to detail but we almost have a joke about whoever is editing it and sharing it with others, and how challenging it is, because everyone is so uncomfortable with it. (Interviewee 1)

The effective use of virtual environments and their deployment in this situation has gone very well. People do not need much guidance. (Interviewee 5)

According to the results, technologies are still used primarily for communication purposes. What has changed, however, is that different video conferencing tools are now more widely exploited. In addition, virtual sites and tools have been built to replace operations previously performed in a physical environment. According to the leaders, the new technological skill requirements of today's leaders are related to versatile use of different tools and features. Leaders need to keep their knowledge up-to-date because technologies and their features constantly change. In addition, some leaders reported that even though they may be familiar with the tools, they need to make sure that others in the team know how to use them as well.

Earlier in the literature, the importance of high technological skills was highlighted (Liu et al., 2018; Fernandez, 2015; Van Wart et al., 2019). It was seen how in the e-environment, leaders need to constantly develop their technical skills and to be aware of the latest trends and updates. It was also emphasized how an effective E-leadership requires knowing how to combine both electronic and traditional methods, meaning that neither should be mutually exclusive (Van Wart et al., 2019). However, the results show how the pandemic situation has challenged this as many teams have worked

entirely remotely. Underestimating the need for physical interaction and relying only on electronic communication methods were seen as a challenge that technology may bring to leadership. Overall, when discussing the skills of the E-leader, the interviewees did not emphasize technological skills as much as, for example, communication or social skills.

Still, respondents identified several benefits of leveraging technologies in leadership. The benefits were seen especially in the ways of communication. For instance, some participants felt that communicating through electronic means allows a leader to focus better on one matter at a time, while others noted how communicating through technologies can create a more informal and humane work environment. Overall, respondents agreed on how they think technology can offer endless possibilities in the future if time and resources are used to understand its potential. The benefits and challenges of technology in leadership are summarized in Figure 5 below.

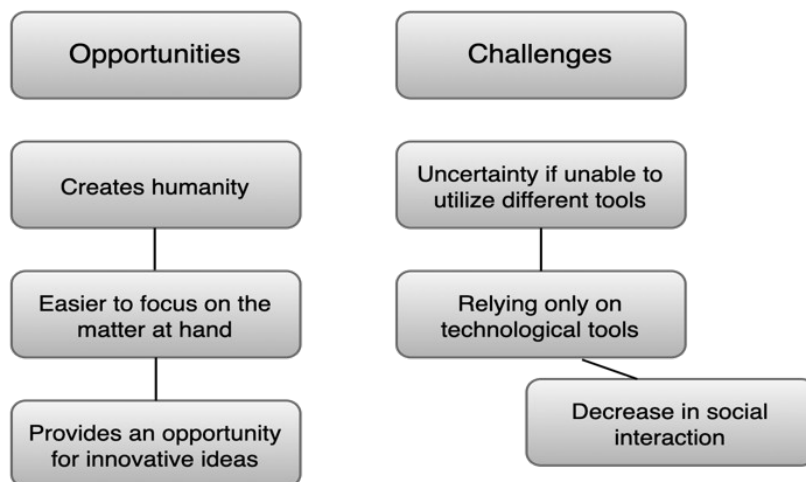


Figure 5. Observed possibilities and challenges of technology in leadership.

Moreover, one interesting finding was related to differences made between technology deployment and use. When participants were asked about the use of technology as part of leadership, most respondents focused more on its deployment. However, a few participants who already were accustomed to using technologies in

leadership made a clearer distinction between technology adoption and actual use. Those participants were already considering the use of technology at a deeper level, meaning for example how technology and its potential could be understood in the future, and how technology could be utilized to create an interactive environment. In the literature, scholars also noted how technology deployment and use should be considered as two separate things because the adoption of technology does not automatically lead to its use (Liu et al., 2018).

Understanding the virtual environment, its deepest essence and possibilities, it is like, very soon you can notice that it is not enough to be able to open the connection, talk and share materials. As this situation lasts, you need to be able to get more out of it to get the sense of presence. (Interviewee 5)

Literature also suggested a model for evaluating the leaders' technology adoption, according to which leaders' prior technological know-how, time and effort spent, and ability to utilize different tools affect how technologies are adopted and actually used (Van Wart et al., 2017). However, the findings of this study show that although the pandemic situation has forced leaders to adopt new digital technologies, the technologies are still not very widely exploited. Therefore, although the results show a willingness to understand how technologies could be utilized more, the work towards it is still in progress.

The last of the six skill requirements in the SEC model was related to trust-building. The participants were asked how they build and maintain trust in the e-environment, and whether it is different compared to trust-building in the traditional environment. As the literature has shown, one of the key characteristics of an effective E-leadership is to ensure a trust-building environment (Malhotra et al., 2007, p. 60).

Based on the results, the majority of respondents highlighted the importance of building and maintaining trust in the e-environment. However, the findings show how trust was considered from slightly different perspectives. For some respondents, trust-building meant knowing people and being able to treat them correctly and according

to their personalities, while some other respondents felt it was more concretely related to whether the leader can rely on people working in a virtual environment. Despite the point of view, respondents agreed that trust-building was seen as one of the key challenges when leading teams in the e-environment. This finding was also raised earlier in the literature. Literature on virtual leadership has not only emphasized the importance, but also the complexity of trust and trust-building. Scholars noted how it is more challenging to create a trustworthy environment when leaders and their followers work virtually. (Savolainen, 2013; Snellman, 2014.)

Well, that is the most difficult part. Because when you meet a person face to face, you get the sense of whether you have the same chemistry and how he/she reacts if you tell a joke, so what is the response. So you are able to understand the right communication channel very quickly. And when you find that same channel, people feel confident with you and you are able to build that trust, and that is where it starts. (Interviewee 4)

It is a big challenge. It is probably one of the biggest challenges in virtual teamwork. You cannot look after people they are doing their work in a similar way as in a traditional environment. (Interviewee 6)

The majority of the respondents also noted how trust-building in the virtual environment was influenced by the relationship between the leader and subordinates. If the relationship was already strong and built in the face-to-face environment, it was easier to maintain trust in the e-environment. Therefore, the major challenge has been in teams where the leader and subordinate have had to get to know each other in the virtual environment.

In the next section, the main findings will be discussed and summarized, followed by the evaluation of managerial implications and theoretical contributions of this study. In addition, the limitations and suggestions for future research will be presented.

7 Conclusion

The final section of this thesis concludes the main findings of this study, followed by a discussion of the managerial implications and theoretical contributions. In addition, the author will present the limitations of this study and provide suggestions for future research.

The purpose of this study was to evaluate E-leadership in virtual teams, especially during the global Covid-19 pandemic, which has rapidly accelerated the amount of virtual work. The study focused on the role of the leader and the essential E-leader skills needed to lead virtual teams in the e-environment. In addition, the aim was also to evaluate how leaders have leveraged digital tools in leadership when work has moved from office to home, and communication between leaders and subordinates has taken place virtually. To fill the research gaps of this study, seven semi-structured interviews were conducted remotely through Teams and Zoom.

7.1 Main findings of the study

Based on the findings, one of the major changes in the role of today's leader is how leadership requires a more proactive and systematic approach compared to traditional leadership, as was proposed in the literature on leadership in the Covid-19 context (Chamakiotis et al., 2021). Leadership no longer succeeds without advance planning, since the virtual environment limits the interaction between leaders and subordinates. Limited interaction, in turn, was seen to affect the role of the leader, for example, by reducing creativity, innovation and making it more difficult to know how people are doing.

Due to the rapid spread of the pandemic, the new leadership skills have been implemented very quickly and without preparation in advance. Although the required E-leader skills are not completely new, in the e-environment, there are several new

nuances that the leader must adapt. The findings support the literature and the skills proposed by Van Wart et al. (2019). Communication and social skills were especially highlighted. The results recognized the importance, but, at the same time, the challenge of how leaders must pay particular attention to the various personalities and select the right communication methods and tools according to those. In other words, the importance of people-centered leadership skills was especially emphasized in virtual work. However, as was noted in the literature, this was seen as particularly challenging if the leader and the team member have never met face-to-face (Van Wart et al., 2019; Fernandez et al., 2015).

In addition, one of the main findings was related to the technical skill requirements of E-leaders and the use of digital tools in leadership. The literature on E-leadership showed how researchers have become to be interested in the impact of technology on leadership, and how leaders make use of various ICT tools (Carreno, 2019; Avolio et al., 2001; Torre & Sarti, 2020). In addition, the literature suggested how the current Covid-19 pandemic may pose challenges to teams from a technical point of view (Newman & Ford, 2021).

However, the results show that technological skills were not as much emphasized in the interviews as they were in the literature. Also, although the global Covid-19 pandemic had rapidly changed the working methods, most of the respondents did not feel that the new work situation has required a lot of new technological know-how. Overall, the interviews showed that leaders and their followers have adapted well to the new virtual environment from a technical point of view. Based on the interviews, it can be concluded that other skills were more emphasized, and they were seen as posing more challenges to leadership in the virtual environment.

This is likely to be affected by globalization, and the fact that nowadays more and more firms have operations on a global scale. Leaders are accustomed to leading global teams remotely through electronic means. Therefore, because leaders' technological know-how is already at a relatively high level, the global pandemic

situation may not have affected work as much as it would probably have affected before the digital age. The results showed how technological know-how was at a higher level in global teams, where teams were already more used to communicating through electronic means. In contrast, those interviewees who had worked mainly locally felt that the new situation required a more new technological know-how.

In addition, the results supported the literature on how building and maintaining trust in a virtual environment is particularly important for the effectiveness of virtual teamwork (Hacker et al., 2019). Trust was considered from two perspectives – whether a leader can trust that subordinates do their jobs, and more generally, how confidential the leader and subordinate perceive their relationship.

The current global Covid-19 pandemic has mostly affected global virtual teams, where traveling has been considered as the key factor for global cooperation and teamwork. The results show that even though face-to-face interaction is still considered important, leaders have realized that traveling is not always necessary for effective teamwork, especially if the team already knows each other. Physical interaction was perceived as most important at the beginning of teamwork, as suggested in the literature (Fernandez et al., 2015).

Most of the interviewees of this study had previously worked only physically in the office, and therefore the results provide a very recent perspective on the implications of the new situation and the rapid transition to remote working for leadership. Also, while leaders had identified challenges related to virtual leadership, none of the leaders reported that moving to virtual work had a negative impact on teams or leadership.

Still, despite the transition to virtual work, interviewees stressed the importance of face-to-face interaction. Therefore, in the future, it will be interesting to see how virtual leadership will develop as teleworking continues, and how it will affect work communities, as well as the relationships between the leader and subordinates in the

long run. Also, as technology constantly develops, it will be interesting to see to what extent this development can create new ways and means of communication. Future will show how far virtuality can replace traditional working and whether it can someday become a new “normal”, and a standard way of working.

7.2 Theoretical contributions of the study

This study provides a more comprehensive understanding of E-leadership, that was first introduced by Avolio et al. (2001), but which has been relatively little studied in the literature. Therefore, the study offers a new perspective on existing leadership theories by exploring how leaders utilize digital tools as part of leadership. According to the results, the internationality of the team is among the major factor affecting the leaders' current technological readiness. Also, an interesting finding was that although a majority of leaders identified many benefits of using technologies, the utilization of technology in leadership is still in its infancy. Respondents agreed that time and resources are the factors needed to show where the utilization of technologies will develop.

In the context of E-leadership, the study examined the role of today's E-leader and identified the skills which need to be mastered to effectively lead virtual teams. Although virtual teams have been studied before, there is not much prior research that considers the effects of virtual work solely from a managerial perspective and in the context of a global crisis, that has rapidly accelerated the amount of virtual work and forced leaders to adapt their leadership skills accordingly. Therefore, this study increased understanding of the role of a leader and the essential skills needed in virtual environment, and how these skills differ from those required in the traditional environment.

7.3 Managerial implications of the study

Based on the findings of this study, several action points can be proposed. First, leaders should spend time getting to know their subordinates well, especially at the beginning of virtual work. Virtual teams should be formed in a way that each virtual team member contributes, however, taking into account individual needs and preferences. Therefore, time and effort should be spent on evaluating the preferred ways of working as well as collecting feedback from subordinates. Also, leaders must provide feedback themselves. The results highlighted the importance of presence, listening, and paying attention in effective communication. These are also the key factors that help build and maintain trust in virtual teams.

In addition, leaders must keep up-to-date on technological advances and ensure that the team members are as well. Time and effort should be spent to expand leaders' technological know-how so that in the future, leaders can make more efficient use of various digital tools. Also, an unforeseen global pandemic situation has now shown that leaders need to be able to respond flexibly to possible changes in their operating environment and thus adapt their roles and working methods accordingly. These skills will help leaders prepare for similar situations that may arise in the future.

7.4 Limitations of the study

Each study has some limitations. Limitations refer to some constraints related to the research that cannot normally be influenced by the researcher. However, as limitations still might have an impact on the research, they must be identified. (Theofanidis & Fountouki, 2018.) In this study, there are a few limitations. First, time and resource constraints set some limitations for more comprehensive research. This study was conducted as a cross-sectional study, meaning that it was conducted at a specific point in time. However, for this topic, longitudinal research would allow a more in-depth examination, as the time frame would be longer. In addition, because the interviews of

this study were conducted during the Covid-19 pandemic, they were organized fully remotely. As a result, some elements to be evaluated in addition to verbal communication, such as facial expressions and gestures of the interviewees, could not be assessed similarly than in face to face environment.

Another limitation also related to the global pandemic, which was the focus period of this study, is related to the fact that this study has been made two years after the global pandemic began to spread worldwide. Therefore, the results may have been different if this study had been conducted at the beginning of the pandemic. It may be that people have already adapted to a new work situation, meaning that human memory may have already forgotten the first feelings related to the new work situation at the beginning of the pandemic. Also, the results of the main skills needed in the virtual environment could now differ from the results obtained at the beginning.

Moreover, the interviewees of this study were working in different industries. Therefore, the results cannot be fully generalized to a particular sector. Another option would have been to focus on the specific sector, but this was also affected by the time and resource constraints mentioned above.

7.5 Suggestions for future research

Since remote working is going to stay even after the pandemic, and technologies are constantly developing, it would be interesting to conduct similar studies later to see where virtual working and the role of leaders are evolving. It would be especially interesting to study the development of technological skills of leaders in the future. In addition, as mentioned above, leaders from different industries were interviewed for this study. In the future, the research could be targeted to a specific industry or to different departments within the same company. Overall, targeting the study to focus on a specific demographic factor could yield interesting and comparable results.

Also, in addition to qualitative studies, a quantitative research could give interesting results related to this topic. For instance, as the results of the interviews showed that virtual leadership requires more time than leadership in the traditional environment, quantitative methods could be used to measure how leaders' working hours have changed since the beginning of the pandemic.

Lastly, as this study interviewed Finnish leaders, future research could expand the research to other countries as well. For instance, it would be interesting to make a comparison for Finnish and foreign leaders on virtual leadership and the skills needed in the virtual environment. For instance, since Finland is one of the most advanced technology countries in the world, a country with a less advanced level of technological know-how could be used as a comparison.

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Appendix

Appendix 1. Interview questions

Background questions

- Could you briefly describe your role and the main responsibilities in your company?
- How long have you been working in your current position?
- How many subordinates do you have?

Working in virtual teams before and during the Covid-19 pandemic

- Could you briefly describe your experience of working in a virtual team?
- How did your team work before the pandemic and how have the working methods changed due to the pandemic?
- How do you think the pandemic situation has affected your role as a leader?
- What has changed and what has remained the same?

E-leadership

- In your opinion, how has the virtual leadership succeeded during the pandemic?
- What has gone well?
- What challenges have you faced?
- What similarities and differences do you see in leading virtual teams compared to leading traditional teams?

E-leadership skills

- In your opinion, what are the most important leadership skills in the e-environment?
- How do these skills differ from the skills needed in the traditional environment?
- Could you describe how the virtual working during the pandemic has affected the following skill requirements of leaders?

1) Communication skills

- How would you describe communication in your team?
- What kind of communication skills the new work situation has required from leaders?
- How do these skill requirements differ from the skills required in a traditional work environment before a pandemic?

2) Social skills

- What kind of social skills the new work situation has required from leaders?
- How do these skill requirements differ from the skills required in a traditional work environment before a pandemic?

3) Change management skills

- What kind of change management skills the new work situation has required from leaders?
- How do these skills requirements differ from the skills required in a traditional work environment before a pandemic?

4) Team-building skills

- What kind of team-building skills the new work situation has required from leaders?
- How do these skills requirements differ from the skills required in a traditional work environment before a pandemic?
- Have you organized any additional activities during the Covid-19 pandemic?

5) Technological skills

- Could you describe your experience in utilizing technology as part of leadership?
- What kind of technical skills the new work situation has required from leaders?
- How do these skills requirements differ from the skills required in a traditional work environment before a pandemic?
- In your opinion, what opportunities and challenges does technology bring to leadership?

6) Trust-building skills

- What kind of trust-building skills the new work situation has required from leaders?
- How do these skills requirements differ from the skills required in a traditional work environment before a pandemic?

International teams

- Could you describe your experience working in an international team?
- If the current team is international: Has the internationality of your team influenced its leadership during the pandemic?
- In your opinion, what are the opportunities and challenges of international teams?