

**PREDICTORS OF POSITIVE E-LEADERSHIP**

Henry Karl Bruno Leschig

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Supervisor:

Doutor Nelson Campos Ramalho, Assistant Professor, ISCTE Business School

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## **Abstract**

The ever-growing digitalization is affecting many parts of businesses. This is also the case for leadership. With the establishment of virtual teams, research is moving into e-leadership, leadership in a virtual environment. This study aims to show the different impacts e-leadership has, in a virtual environment on employee trust, communication quality and job outcomes (job satisfaction/ job performance). The full model includes two variables, derived from transformational leadership (individual consideration and intellectual stimulation), trust, communication quality, job satisfaction, and job performance, as well as remoteness as a moderator.

PLS-SEM analysis with a sample of 50 virtual team members showed that the model has two active mediations linking individual consideration to perceived job performance and that remoteness did not moderate it. Most path though were not significant, which was not expected. Findings suggest that most of the functions already established to be working in a traditional leadership approach, translate into a virtual team environment.

**Keywords:** e-leadership, Leadership, Transformational Leadership, Trust, Communication, Job Satisfaction, Digitalization, Human Resources, PLS-SEM

## **Resumo**

A crescente digitalização está a afetar muitas partes das empresas, o que é extensivo à liderança. Com o estabelecimento das equipas virtuais, a investigação está a colocar o foco na e-liderança, ou seja, a liderança em ambientes virtuais. Esta pesquisa procura testar os diferentes impactos que a e-liderança surte num ambiente virtual sobre a confiança dos colaboradores, a qualidade da comunicação e os resultados do trabalho (satisfação e desempenho). O modelo integrado constitui uma mediação sequencial de 3 caminhos entre duas variáveis derivadas da liderança transformacional (consideração individual e estimulação intelectual) e os resultados do trabalho (satisfação e desempenho percebido) por via da confiança e da qualidade da comunicação, considerando ainda o grau de virtualização enquanto moderadora.

Uma análise PLS-SEM de 50 inquéritos válidos de membros de equipas virtuais mostrou que o modelo tem duas mediações a operar ligando a consideração individual ao desempenho percebido e que o grau de virtualização não opera como moderadora. Contudo a maioria das associações não é estatisticamente significativa, ao contrário do esperado. Os resultados sugerem que a maioria das funções que se sabe operarem na situação de liderança tradicional, podem ser extrapoladas para um ambiente de equipa virtual.

Palavras-chave: e-liderança, Liderança, Liderança Transformacional, Confiança, Comunicação, Satisfação no Emprego, Digitalização, Recursos Humanos, PLS-SEM

## Index

<b>List of Figures</b> .....	
<b>List of Tables</b> .....	
<b>I. Introduction</b> .....	1
<b>II. Literature review</b> .....	2
E-Leadership .....	2
Transformational Leadership .....	4
Communication .....	5
Trust .....	7
Job outcomes .....	11
Chapter Summary.....	13
<b>III. Method</b> .....	15
Measures.....	16
Transformational leadership.....	17
Trust .....	17
Communication quality .....	18
Job satisfaction .....	18
Job performance .....	18
Sociodemographic variables .....	18
Control variable.....	19
Sampling procedure.....	19
<b>IV. Results</b> .....	20
Discussion and conclusions.....	27
<b>V. Bibliography</b> .....	31
<b>VI. Appendix</b> .....	38

## List of Figures

Figure 1(IIa) Research Model .....	14
Figure 2 – IVb - Age .....	21
Figure 3 – IVc - Education .....	22
Figure 4 – IVd – Work Experience .....	23
Figure 5 – IVe – Research Model (Results) .....	26

## List of Tables

Table 1- IVa – Descriptive and bivariate analyses .....	20
Table 2 - IVb - Age .....	21
Table 3 – IVc - Education .....	22
Table 4 – IVd – Work experience .....	23
Table 5 - IVf - Direct effects .....	24
Table 6 - IVh - Interaction effects .....	25
Table 7 - IVi – Indirect effects within full model .....	27

## **I. Introduction**

“What makes a good leader and how does he/she motivate his/her followers?” Questions like these have plagued humanity ever since the first people had the chance to think about a more meaningful approach to leadership. Back when philosophers, like Plato, started writing down their thoughts, questions about leadership were asked: “And our guardian [leader] is both warrior and philosopher?” (Jowett, 2014). These queries were posed, in order to find an answer which benefited society like: “*What do leaders need to possess to be successful for themselves and their followers? How do they make their leadership best for everyone?*”

The more societies advanced and developed, the more they theorized about such questions. In the recent century, researchers and scholars made big advancements towards an explanation. The first steps towards leadership theory were made with approaches like the “great man theory” by Thomas Carlyle (1841), in which he stated that history is shaped by influential people, like Napoleon Bonaparte. Since then, science has come a long way and has deepened the understanding of psychology and therefore leadership. More recent theories like transformational leadership are new approaches, to not only explain leadership, but also to improve on it in such a way that every person can achieve his/her maximum potential (Elkhani, Soltani, & Ahmad, 2014). But all the premises of these theories and guidelines are rapidly changing. With the introduction of virtual teams and e-leadership, new parameters for leadership are set. What do you do, when you do not see your employees every day? How do you motivate them without being physically present? Is it possible to build the required level of interpersonal trust, via online communication?

Such questions can only be partially answered. Therefore this thesis will do its part to shed a light on the answers. Most research focused on specific topics, like the research by Vought (2017) on the applicability of transformational leadership in e-leadership. Usually, different theories are tested in different environments and cross-referenced with each other. This thesis will ask questions like: Is it possible at all to build a genuine feeling of trust in a virtual team? Is it possible to develop a positive communication, only assisted by electronic means of communication?

In order to answer such questions, a survey was conducted. The survey asked participants to rate their felt trust, felt the positivity of communication and aspects of transformational

leadership. Additionally, job satisfaction was measured, which will make it possible to link these values and answer the research question: "*What predicts good e-leadership?*"

## **II. Literature review**

To answer the research question, the current state of research has to be examined. The review of literature begins with a summary of e-leadership in general, as well as the current state of research on the topic. Following, the different variables are analyzed with regards to their current state of research, as well as their importance for this study. This research builds the baseline, from which the different hypotheses are derived. The variables are: transformational leadership, communication, trust, and job outcomes.

In order to research the different topics and variables, peer-reviewed journals were selected to build the basis. Most of these were printed in English. They all relate to the fields of business, IT, virtuality and psychology. In order to research the foundations of some constructs and ideas, the original sources were assessed, to exclude the chance of misinterpreting quotes out of context.

### **E-Leadership**

With an increase and development of information and communication technology, the way we communicate and do business has changed (Ocker, Huang, Benbunan-Fich, & Hiltz, 2011). Consequently, the way people work and the way we lead have been influenced as well (Avolio, Kahai, & Dodge, 2000). Not only does such a development open the door for new business opportunities, but it also opens a possibility to change our understanding and definition of leadership (Lepsinger & DeRosa, 2015). Referring to such a statement, Savolainen (2013), wrote that e-leaders face different challenges, compared to, leaders that follow a more traditional leadership approach. One of these challenges is the widely recognized fact, that traditional leaders base their leadership on face-to-face interactions. E-leaders, on the contrary, need to lead their virtual teams, usually without ever physically meeting their followers (Trivedi & Desai, 2012). Consequently, the concept of e-leadership does refer to leaders, who mainly communicate via information technology, and whose collection of information, as well as their interaction with their colleagues is facilitated by information technology (Avolio, Sosik, Kahai, & Baker, 2013). Hence, e-leadership can be seen as a solution and response to the new challenges, which are raised by digitalization and the technological development (Snellmann, 2014).



## Predictor of positive e-leadership

However, there are also problems with working in a virtual environment. One of the biggest challenges is to maintain mutual knowledge and accessing dispersed knowledge within this virtual environment (MacDuffie, 2007). Additionally, conflicts that are fueled by different cultural backgrounds can arise. This can be made even worse through the usage of different websites and media (Kankanhalli, Tan, & Wei, 2006). Such problems cannot be easily solved. They require a lot of work and attention from leaders. Consequently, they have to find new approaches to tackle these problems. Ultimately, information and communication technology is not a solution to all problems, but rather a support mechanism (Nilan & Mundkur, 2007).

E-leadership can also be called virtual leadership. The name virtual leadership emphasizes the connection between the leadership and the virtual team, which is led by the virtual leader, much more thoroughly. Furthermore, this kind of leadership is multidimensional with characteristics, that differentiate it from leadership in an offline setting (Faraj, Kudaravalli, & Wasko, 2015). Researchers state that virtual leadership is a combination of skills and knowledge structures, that are comprised of cognitive abilities, cognitions and meta-cognitions that, in the end, translate into performance (Serban, et al., 2015).

Some scholars researching e-leadership have come to the conclusion that the performance in e-leadership can be increased by effective leadership (Iorio & Taylor, 2015). Avolio et al. (2013) embraced this new approach and split e-leadership into three levels, in order to better explore the relations and connections. First, they defined a micro-level, which is made up of individuals and dyads. Secondly, a meso-level was established which is made up of groups and teams, and lastly a macro level that describes organization and context. By reviewing the literature, the authors were able to analyze leadership from different perspectives, namely: traits, cognition, affect, and behavior on the micro-level. It is argued by the authors, that a constant influence of technology generates change within, or transforms, social structures, which were institutionalized, on the meso-level, over time (Avolio, Kahai, & Dodge, 2000). The accessibility of technology and information transparency enabled the rise of social media and enabled people to communicate even more effectively across the globe. This affected leadership as much as the ability to work remotely and the rise of tracking devices. Avolio et al. (2013) stated that the future of e-leadership might be closely related to the future of gamification. Such a statement, once again, highlights the interdisciplinary connections, the internet enables.

## **Transformational Leadership**

In 1978 James Burns reviewed different leadership approaches, used by historical leaders. He identified two kinds of leaders. Therefore, he defined two sorts of leadership, through which all leaders can be classified. The classification of leaders would follow the principle of influence. Do the leaders have a propensity towards a transaction with their subordinates or do they transform their subordinates? (Burns, 1978). This idea of transforming the subordinates has gained popularity, due to the fact that a lot of evidence pointed towards a positive correlation between leadership and interpersonal trust, team performance, commitment, team effectiveness, team empowerment, customer satisfaction and other performance indices (Avolio, Sosik, Kahai, & Baker, 2013).

Traditionally, transformational leadership is made up of four dimensions, called the four I's: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1985). These four I's are supposed to transform ordinary employees into high performers, that were guided by leadership behavior towards a lasting and positive change (Elkhani, Soltani, & Ahmad, 2014). Idealized influence is defined as a way to behave, that leaders demonstrate to provide a role model for ethical behavior, to gain respect and trust. Inspirational motivation is used by leaders, to install a vision, which is appealing and inspiring, in their team-members. In order to challenge the assumptions of the team members, make them take risks and to foster their ideas, the third of the four "I's" Intellectual stimulation can be applied. Individualized consideration is a way of behavior by the leader. In this, the leader attends to the needs, concerns, hopes, and doubts of all team members and coaches them in the way, which is most beneficial for them (Vought, 2017).

Research suggests that transformational leadership has a profound impact on e-leadership and virtual teams. Lehmann-Willenbrock et al. (2015) found one of such effects. The researchers studied 30 virtual teams and their way of communication, to find that transformational leadership does improve the communication, by solving a functional problem. The improvement was linked to the fact that the leader, with his/her solution, focused communication, helps the team members to adopt a similar way of communicating. This helps to streamline the communication by leaving out counterproductive statements, such as running off-topic, complaining and criticism. Such topics, especially criticism, are important for the development and therefore the success of a team, but there is a time and a place for it. Therefore, it can be said that transformational leadership does not only have a direct impact on the virtual

## Predictor of positive e-leadership

teams, but also an indirect impact, as positive examples are set, which the teams follow (Lehman-Willenbrock, Meinecke, Rowold, & Kauffeld, 2015).

Vought (2017) conducted a study to measure how the different aspects of transformational leadership correlate with e-leadership. The study showed that not all transformational leadership behaviors are equally impactful. Vought (2017) found that individualized consideration has an especially positive impact on e-leadership. This behavior had the only positive correlation with e-leadership. Curiously, intellectual stimulation had a negative correlation and the last two behaviors (idealized influence and inspirational motivation) had no statistically significant impact. Individualized consideration can be described as enabling others to act and encourage the heart (Kouzes & Posner, 2012). E-leaders can use this knowledge to put a special emphasis on two of these aspects, to provide the best experience for their team and to increase their productivity (Vought, 2017). For research purposes, this implies that research on transformational leadership in a virtual context should focus on these dimensions separately as it has a differentiating impact on variables such as communication.

## **Communication**

As communication is an integral part of private and professional life, it is a topic many people researched. Not only does communication enable the transfer of information, meaning, and knowledge between two or more parties, but it is also one of the fundamental building blocks of modern society. It enables people to collaborate, make decisions and solve problems together (Berry, 2011). Therefore, effective communication is important for a team to function and to achieve its goals. This is especially true for virtual teams, as they are per definition in different physical locations and rely on communication technology to step in. Nevertheless, virtual teams offer an advantage in terms of cost reduction and market responsiveness (Mukherjee, Lahiri, Mukherjee, & Billing, 2012).

Communication can also be observed in regards to who is involved and who is communicating. A distinction between *horizontal* or *co-worker communication* and *vertical* or *supervisory communication* can be made (Chan & Lai, 2014). Horizontal communication describes communication on one hierarchical level, between co-workers. It can be both task-related and informal. Informal communication revolves around more private topics, which are not of vital importance for the task at hand, but improve the "quality of life". Task-related horizontal communication can influence the sense of identification a team-member feels (Bartels, Peters, De Jong, Pruyn, & van der Molen, 2010).

## Predictor of positive e-leadership

Vertical communication, on the other hand, serves to define an organization and emphasizes what the organization stands for (Dutton, Dukerich, & Harquail, 1994). Usually, vertical communication travels top-down or bottom-up, while conveying information about the organizations' strategy or the employees' position within the organization. Bottom-up communication is the flow of information from the employees up to managerial levels and contains, for example, an employee's opportunity to participate in decision making. Top-down communication usually contains information about the organizations' strategy, which is conveyed from the managerial levels to the employees (Bartels, Peters, De Jong, Pruyn, & van der Molen, 2010).

E-leaders also face a new set of challenges, which "traditional leaders" only faced to some extent. For example, a recent study (Zhu & Smith, 2019) found that communication is also influenced by cultural values and their understanding of time. E-leaders are especially affected by such differences due to the fact that they and their teams can be spread through multiple countries and cultures rather easily. Zhu and Smith (2019) found, that people, which come from a polychronic background have an easier time to adjust to a virtual work environment, as they are used to doing multiple things at one time. They found that this relationship has an impact on job satisfaction. Furthermore, the authors suggest that such knowledge can be used when selecting a manager, to lead a virtual team. E-leaders should take into account, that employees with higher polychronic values will experience greater job satisfaction when working in a virtual environment (Zhu & Smith, 2019).

After examining the importance of communication for leadership and the potential impact it has on e-leadership, the following hypothesis was formulated:

***H1: Transformational leadership positively relates to leader communication quality***

*H1a: Individual consideration is positively related to communication quality*

*H1b: Intellectual stimulation is positively related to communication quality*

Face-to-face communication is richer in information, compared to "computer-mediated asynchronous communication" which is used in virtual teams. The communication can be called asynchronous because it is not based on "turn-taking" as it is in face-to-face communication. Mails, for example, can cross each other or similar emails can be sent from different parties, asking on behalf of the same issue. Furthermore, multiple topics of communication can occur at once and confuse the parties involved. Again, the role of the cultural background does impact

## Predictor of positive e-leadership

communication and potential outcomes as the standards for communication differ, which can lead to a potential loss of information and therefore requires a lot of sensitivity, and background knowledge, from both parties (Berry, 2011).

As early as 1999 the researchers Suzanne Weisband and Leanne Atwater researched the influence of electronically mediated communication in comparison to face-to-face communication. They had multiple results. Their first result was the observation that their participants were more attracted towards each other when communicating face-to-face. The second observation they made was that people liked themselves more while communicating electronically, the self-ratings were much higher. Additionally, they found evidence that liking another person had impacts that were greatly reduced if the participants communicated electronically. Lastly, it was shown that the number of contributions into a discussion had a greater impact in an electronic environment (Weisband & Atwater, 1999). Taking this into consideration, we hypothesized that:

***H2: Remoteness moderates the relationship between transformational leadership and communication quality in such a way that the positive impact of transformational leadership will be weakened as remoteness increases.***

*H2a: Remoteness moderates the relationship between individual consideration and communication quality in such a way that the positive impact of individual consideration will be weakened as remoteness increases.*

*H2b: Remoteness moderates the relationship between intellectual stimulation and communication quality in such a way that the positive impact of intellectual stimulation will be weakened as remoteness increases.*

Another important variable that has been studied both on leadership and team effectiveness is trust (Dirks, 2000).

## **Trust**

At the beginning of the twentieth century, the understanding of leadership and the way leaders would influence people changed. Earlier leaders had relied on their so-called "referend power", which was basically the power of their position (Kudisk, Poteet, Dobbins, Rush & Russell, 1995; Lunenburg, 2012). They had the ability to reward or punish as well as control over the flow of information. Soon it became clear that such an approach would not incentivize people to use their full potential. With the need to count on people's "goodwill" and sympathy the

discussions about leaders changed. People focus more on the charisma of how likable or exciting a leader is. In this discussion, one aspect can often fall short, how trustworthy is a leader? Moreover, there is a bigger focus on how leaders can generate trust in their followers, instead of followers granting their trust. It can be a burden to followers, to decide if they can trust their leader. The outcome of this decision can “make or break” a leader in today’s environment. Adversely, it has long been established that people voluntarily follow leaders, whom they deem worthy of their trust and respect as a person (Ciulla, 2017).

Trust can come in two forms, affect-based and cognition-based trust. Cognitive trust is cognition-based, meaning that “we choose whom we will trust in which respects and under what circumstances, and we base the choice on what we take to be ‘good reasons’, constituting evidence of trustworthiness” (Lewis & Weigert, 1985, S. 970). This means, that the available knowledge and “good reasons” have to serve as a foundation for these kinds of trust decisions. Affective trust has its roots in the emotional bond between individuals. When people make an emotional investment into another person, they express genuine care and concern for the well-being of the partner. This investment is based on the intrinsic virtue of such a relationship and the belief that the sentiments are reciprocated (Lewis & Weigert, 1985).

Daniel McAllister (1995) conducted a study on trust, which proved, that one can reliably measure these two dimensions of trust in a business environment. Additionally, he put them into a relationship with the managers and the employees. He found, that the perceived amount of cognition-based trust is higher than the affection-based trust. Additionally, cognition-based trust is thought to be needed to develop affection-based trust.

In virtual team leadership, trust becomes even more critical due to the number of obstacles that its virtual nature poses to building trust processes (Zaccaro & Bader, 2003). Taking into account the fact that mutual trust plays a key role in international alliances (Grosse, 2002), as virtual teams face more uncertainty because they only have incomplete knowledge of the other team members, it is especially important for virtual teams to establish mutual trust (Child, 2001).

A study conducted two decades ago by Sirkka Jarvenpaa and Dorothy Leidner (1999) found that virtual team members tend to quickly show trust, what the authors called “Swift trust”, but that it tends to be fleeting and to be overridden easily. Trust can also be established by setting expectations towards team members, which are continuously reached or exceeded by the team (Casico & Shuygailo, 2003). So, the processes by which trust in teams is built should be considered when exploring this topic in virtual teams.

## Predictor of positive e-leadership

John Child (2001) suggested a trust building process. The author proposed that different kinds of trust depend on each other and that natural development occurs. He states that trust, which is rooted in calculations, is the first step in a new relationship. The calculations, in this case, are, that one reason if the partner has the ability, competence, and motivation to deliver on their promises. Additionally, there have to be enough deterrents, like law and reputation, to ensure that the expectations will be fulfilled. This form of trust is often found in new teams, which do not have any prior connection. The second foundation which is explained by Child is trust based on mutual understanding. Trust is built on mutual knowledge and common experience among the partners. The author details that, by repetitive exchanges and by living up to the expectations of one another, partners become confident that the other person does not intend to let them down or cheat them. This stage of trust is especially important if one considers that business people tend to attach less meaning to formal contracts the longer they work together (Sako, 2006). Lastly, Child (2001) explains, that trust can be built on bonding. Such a form of trust can be associated with a strong personal relationship. This form of trust only occurs if both parties share similar values, including a concept of moral obligations. If two parties have a relationship, which they maintained for a long time and both parties meet on a private basis, allowing them to identify with each other and to form a bond, the conditions are set to develop deep trust. Additionally, it allows them to collect information about each other, which in turn reinforces the relationship (Child, 2001).

Frequent interaction between team members is essential to develop a trust relationship (Ashleigh & Nandhakumar, 2007). By interacting with each other, people share important information about the nature of the team task and to communicate challenges in the task, the team is facing. Interacting frequently will also build a relationship between team members. This relationship can lead to more efficiency and enable the establishment of greater affective trust (Ashleigh & Nandhakumar, 2007).

DeRosa, Hantula, Kock and D'Arcy (2004) explored the challenges that virtual team leaders face in communicating and building trust with team members from a media naturalness theory (Kock, 2002) point of view. This theory takes an evolutionary stance to reason upon the optimum conditions for human interaction as modelled by evolution, as well as the adaptation mechanisms individual possess to adjust to changes that evolution itself presents. This theory contends that the natural human communication system is designed to occur in a synchronous way and face-to-face. This situation is the one that puts less cognitive burden on individuals to process social information and operates both verbally and non-verbally channels. However, the

## Predictor of positive e-leadership

theory also proposes that human evolutionary processes created a common ground for all individuals, independently of their specific culture. Therefore, all individuals should have a repertoire of behaviors that are similar when facing a virtual communication setting. Lastly, the built-in adaptive mechanisms by human evolution are diverse and allow individuals to take as natural novel situations as they get used to operate in such contexts. For example, as individuals create the habit to using electronic means to communicate, they will report using it quite naturally due to familiarity. Building upon this theory DeRosa et al. (2004) explain that there are reasons to expect virtual team leadership to face difficulties in developing trust but also that adaptive processes play a role that may bypass the obstacles placed by asynchronous communications, geographical dispersion, or cultural differences. Independently of the open questions about trust, it is reasonable to see it as a key asset that impacts team outcomes and is at least partially dependent on leadership influence in the team. Therefore, we hypothesized that:

***H3: Trust in the leader mediates the relationship between leader communication quality and job outcomes***

*H3a: Trust in the leader mediates the relationship between leader communication quality and job performance*

*H3b: Trust in the leader mediates the relationship between leader communication quality and job satisfaction*

As transformational leadership focuses on building a trust-based environment, both, leaders and followers have to see their environment as an essential part of accomplishing goals (Walumbwa, Hartnell, & Oke, 2010). In order to establish such an environment, effective and interactive communication is key. Transformational leaders can use this to establish respect, understanding, trust and common ground with their followers (Bass, 1985). Even when the virtual team leader is not designated and the team operates in a self-management mode, where leaders assume power in a rotating fashion depending on the specific tasks at hand, communication quality (taken as how much and how someone communicates in writing) is linked with the emergence of transformational leadership (Balthazard, Waldman & Warren, 2009).

Therefore, the relationship between transformational leadership, communication quality and trust in leader must be accounted for. So, we hypothesize that:



Predictor of positive e-leadership

***H4: Communication quality with the leader mediates the relationship between transformational leadership and trust***

*H4a: Communication quality with the leader mediates the relationship between individual consideration and trust*

*H4b: Communication quality with the leader mediates the relationship between intellectual stimulation and trust*

As a consequence of connecting the first with the second hypotheses, we believe that:

***H5: Transformational leadership is positively related to job outcomes through the sequential indirect effect via communication quality and trust.***

*H5a: Individual consideration is positively related to job performance through the sequential indirect effect via communication quality and trust.*

*H5b: Intellectual stimulation is positively related to job performance through the sequential indirect effect via communication quality and trust.*

*H5c: Individual consideration is positively related to job satisfaction through the sequential indirect effect via communication quality and trust.*

*H5d: Intellectual stimulation is positively related to job satisfaction through the sequential indirect effect via communication quality and trust.*

## **Job outcomes**

Judging on Robbins (Robbins, 2011) conception of explanative behavioral models in an organizational setting, the outcomes are always conceived with a focus on job satisfaction and job performance expressed in productivity and the basic conditions such as absenteeism and employee turnover. These are the fundamental dimensions that translate job outcomes, and this section is built with a focus on these two facets.

A key facet of team effectiveness is often considered to be job satisfaction, which can be defined as a team member's "positive appraisal of [his/her] job or job experience" (Locke, 1976, S. 1300). The feeling of job satisfaction can have many reasons. Employees can feel satisfied when they receive a material gain, when they feel appreciated or when they work with colleagues, who's company they enjoy (Bayir & Karadag, 2015).

## Predictor of positive e-leadership

The theory of job satisfaction is rooted in many psychological theories and principles. Many researchers quote one of the most well-known motivation theories, Maslow's hierarchy of needs. Maslow's theory states, that needs can be seen as a pyramid, in which the most basic needs build the foundation, like thirst, hunger or reproduction. The next level of needs would be the need for security, which includes needs like a place to stay and sleep, as well as being bodily unharmed. This pyramid grows until it accumulates in self-realization (Maslow, 1954). Even though this theory has lost its popularity over time and many flaws have been found, it's still one of the first approaches to explain motivation and satisfaction (Bayir & Karadag, 2015). Another theory, which tries to describe motivation and satisfaction is Herzberg's two-factor theory. In this theory, Herzberg explains, that there are two kinds of motivational factors, internal and external factors. External factors, also known as hygiene factors, motivate the employees externally through, for example, policies of an organization, working conditions, the approach on management. Internal factors, also known as motivators, motivate an employee intrinsically and are usually seen as stronger and longer-lasting motivators. Such motivators may include, achievement, responsibility or acknowledgment (Herzberg, 1966).

According to Luthan`s (1989) job satisfaction has three dimensions:

- Job satisfaction is a construct of many factors, including the employee's emotions about his/her work environment. Thus it cannot be observed, only expressed.
- Job satisfaction is generally the degree to which people's expectations are met. If, for example, people increase their workload, but the reward stays the same, people start to develop a negative association with their job.
- Job satisfaction represents the various factors, which come with a job, like a salary, opportunities, colleagues and the work itself.

Despite satisfaction facets, there is a consensus that measures of overall job satisfaction have equivalent power than multi-item measures (Wanous, Reichers & Hudy, 1997; Nagy, 2002) which is indicative of a global factor encompassing this construct.

A meta-analysis of 2015 found that leadership has a high statistical impact on the job satisfaction of the employees. Moreover, it was found that the leadership style has a significant impact on job satisfaction as well, especially, if leadership skills can be displayed (Bayir & Karadag, 2015).

## Predictor of positive e-leadership

In order for organizations to be successful and thrive, the employees need to do their job in a good manner. This is usually referred to as job performance. Job performance is widely recognized as one of the key performance indicators. John Campbell (1994) described it as an individual variable and as a way of behavior. This distinction helps to separate job performance, as its own instance, from other concepts, such as outcomes. Job performance plays part in the outcomes, but other variables add to it as well. Consequently, job performance can be summarized as an employee's behaviors and actions, which are goals relevant (Campbell, 1994).

Van Knippenberg et al. (2004) linked identification with the work unit to individual job performance. The authors argued, that individuals get induced to take the groups perspective and to see the target goals as their own. This statement also links to the self-identification theory, especially with the self-presentation and self-verification parts (Schlenker, 1986). In this case, self-presentation refers to a behavior, which establishes one's self-image with other people. On the other hand, self-verification demonstrates ones chosen identity to one's self. People, with high values of self-presentation and self-verification, tend to become more involved in the group and their jobs (van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004).

When the idea of "human relations" began, it introduced many ideas, one of them was the happy worker hypothesis. According to this idea, more satisfied and happy employees will always outperform employees, who are dissatisfied with their job and their environment. Judge, Erez and Bono (1998) found proof through a meta-analysis, which points towards a stronger correlation of these factors than originally estimated. Studies by Isen (2010) showed, that mood and emotions influence a possible job outcome. Consequently, the roots of these emotions should be able to indirectly influence job performance (Judge, Erez, & Bono, 1998). Leadership behaviors like transformational leadership, which are focused on creating an empowering, positive environment, should have a positive influence on job performance, as shown in H5a and H5b.

## **Chapter Summary**

This chapter explored the definitions of e-leadership, Transformational leadership, communication, trust as well as key job outcome measurements. The reviews showed, that all topics are related to leadership and their importance for this study. Hence it is suggested, that

## Predictor of positive e-leadership

their importance for e-leadership is even greater, as many important, subconscious features, like body language, do not come into play (Avolio, Kahai, & Dodge, 2000). Based on the different topics, multiple hypotheses were deducted, in order to analyze their importance for job outcomes and therefore e-leadership.

The hypotheses are:

- *H1: Transformational leadership positively relates to leader communication quality*
- *H2: Remoteness moderates the relationship between transformational leadership and communication quality in such a way that the positive impact of transformational leadership will be weakened as remoteness increases.*
- *H3: Trust in the leader mediates the relationship between leader communication quality and job outcomes*
- *H4: Communication quality with the leader mediates the relationship between transformational leadership and trust*
- *H5: Transformational leadership is positively related to job outcomes through the sequential indirect effect via communication quality and trust.*

Integrating variables under study and the respective hypotheses generates a research model as follows (Figure IIa).

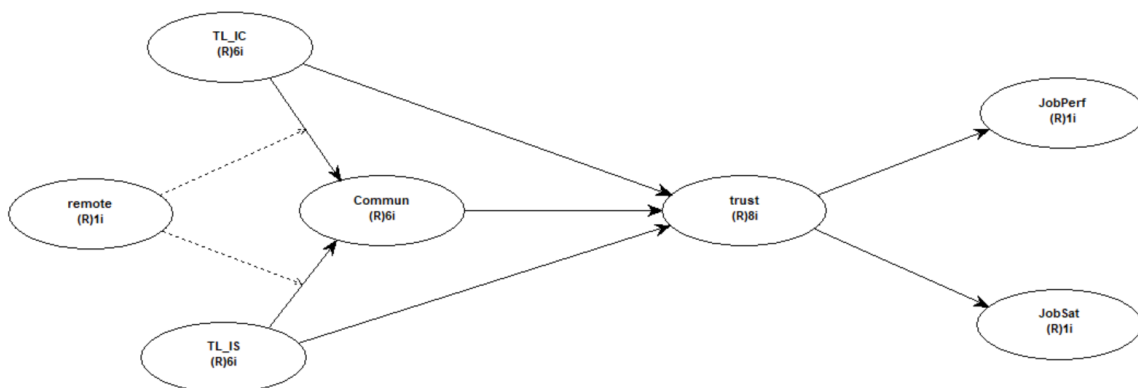


Figure 1(IIa) Research Model

### **III. Method**

The current research study was conducted in a business environment and through social media. Because this study is based on reaching as far as possible and the only prerequisite needed to participate is the fact, that you have to have worked in a virtual environment, it was possible to post a link to the study on various social media networks. Additionally, the link was distributed via a business consultant and at a recruiting agency. These two methods of distribution ensured a professional background for the participants.

#### **Research Design**

After the literature review, it was found that most of the research done, on the topic of e-leadership adopted a quantitative approach. This study follows their example and tries to answer the questions posted, by looking at a sample, which can be generalized, to fit a broader audience. Another advantage of this kind of study is that quantitative research can reach more people, all over the world. Therefore, a survey was conducted, that focused on finding the impact of different variables on the success of e-leadership.

#### **Data analysis strategy**

The first concern on data analysis was to analyze data in search of missing values, outliers and non-usable entries due e.g. to monotonous values (zero variance). After this, data analysis proceeds to test the quality of the measures which required that factors (latent variables) have convergent validity (i.e. that the average variance extracted by the latent variable from the respective items is of at least 50%. Technically,  $AVE > .500$ , according with Fornell & Larcker, 1981). In case the construct comprehends more than a single factor, it is also required that a sound measure has divergent validity (i.e. that the bivariate correlation between the latent variables is smaller than the respective square root of each variable following Fornell & Cha (1994) recommendation. In addition to validity issues, measures also must be reliable, i.e. their component items should be consistently reflecting the latent variable in the same way while the measurement error should be reasonable. Technically, this is measured by Cronbach's alpha achieving at least 0.700 or Composite Reliability (Joreskog's, rho) with the same threshold (Ping Jr., 2004)

## Predictor of positive e-leadership

Once the quality of measures is ascertained, the data analysis proceeds to hypothesis testing. In our case, due to data features, we opted to conduct a PLS-SEM, i.e. a Partial Least Squared Structural Equation Modeling (Hair, Ringle, & Sarstedt, 2011). This technique departs from a theoretically based design of both latent variables and their hypothesized relationship in the full model. It has the advantage of testing all relations simultaneously, thus, preventing measurement error accumulation from sequential tests. PLS-SEM tests the associations between latent variables as well as its statistical significance and does not impose assumptions neither about distributions (it is not a parametric technique) nor the type of measurement scale e.g. it does not require measures to be at interval or metric level, as it can operate with ordinal ones (Vinzi, Trinchera, & Amato, 2010). Amongst PLS-SEM available software, Warp-PLS (Kock, 2019) enables the analysis of relationships without assuming their linearity. This is advantageous because most of the organizational phenomena will probably follow a nonlinear pattern (Bertenthal, 2007).

The Warp-PLS software offers a range of validity measures that indicate if the model is interpretable and what sort of relationships are operating within it. For a model to be valid, we need to work on average significant path coefficient ( $p < .05$ ), and consequently a significant average variance (ARS,  $p < .05$ ). The software also provides the magnitude of the coefficient by showing Cohen's  $f^2$  where values should attain at least 0.15 to be considered moderate and 0.35 to be considered high. Otherwise, they must be taken as weak (Kock, 2019) (Pearl, 2000).

One of the issues that plague multi-latent variable research is the artifact that is produced when predictors in the same model are correlated among themselves, i.e. multicollinearity. This software has a built-in calculation of such a problem by showing a measure of variance inflation (VIF) as full VIF, Average VIF (AVIF) and Average Full VIF (AFVIF). None should achieve the critical value of 5. Additional issues pertain to how data is suitable to be treated with this sort of technique and for such purposes, the software provides a measure of Simpson's paradox ratio (SPR) as well as Nonlinear bivariate causality direction ratio (NLBCDR). These must achieve .70 or higher. Lastly, (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) goodness of fit index is also provided (considered moderate if it achieves .25 and large if it achieves at least .36).

## Measures

Measures are numerical representations of different degrees of attitudes, on which quantitative research is based. Different values and concepts cannot be measured directly but have to depend on reports of actions, attitudes or observable behavior. Therefore, it is necessary to transform

## Predictor of positive e-leadership

the concepts into measurable items (Hagan, 2014). The concepts, relevant to this study were translated into validated and accepted scales which this study adopted for measurement purposes.

### **Transformational leadership**

Transformational leadership and its relationship to e-leadership have already been analyzed in-depth by Vought in 2017. So her work can be used as a basis for the analysis of transformational leadership and its aspects. Vought used the works of Cheung, Ng, Lam, and Yue (2001), in order to measure the different aspects of transformational leadership. Transformational Leadership was measured with two subscales from (Cheung, Ng, Lam, & Yue, 2001) scale, they developed, by reviewing multiple empirical studies, namely, Individual consideration (6 items, e.g. *“My virtual leader gives personal attention to members who seem to be neglected; My virtual leader expresses his or her appreciation when I do a good job”*) and Intellectual stimulation (6 items, e.g. *“My virtual leader gives ideas and forces me to rethink some of my own ideas which I had never questioned before.; My virtual leader helps me to look at problems in a new way, which used to puzzle me before.”*). The option reflected literature review findings that only these two dimensions of transformational leadership were associated with e-leadership. Individual consideration scale has acceptable convergent validity ( $AVE_{IndConsideration}=.584$ ), divergent validity ( $Root\ squared\ AVE_{IndConsideration} = .764$  is above the interfactor correlation,  $r=.663$ ) and high reliability (Cronbach alpha=.856, CR=.893). Intellectual stimulation scale also has acceptable convergent validity ( $AVE_{IntStimulation}=.537$ ), divergent validity ( $Root\ squared\ AVE_{IntStimulation}=.733$  is above the interfactor correlation,  $r=.663$ ) and high reliability (Cronbach alpha=.824, CR=.873). The response scale ranged from 1 (Totally Disagree) to 7 (Totally Agree). The higher the values for each one of these items, the more transformational leadership individuals acknowledge in their leader.

### **Trust**

Trust was measured with (McAllister, 1995) trust scale that comprehends 8 items (e.g. *“This person approaches his/her job with professionalism and dedication; We can both freely share our ideas, feelings, and hopes.”*) divided by two dimensions: affective trust, and cognitive trust, each with 4 items. As both dimensions are strongly intercorrelated ( $r=.734$ ,  $p<.001$ ) we believe it would add to the model’s parsimony to work with a single factor, theoretically conceived as a 2<sup>nd</sup> order factor, that we named “trust”. The scale has both acceptable convergent validity ( $AVE_{trust}=.596$ ) and high reliability (Cronbach alpha=.902, CR=.922). The response scale

## Predictor of positive e-leadership

ranged from 1 (Totally Disagree) to 7 (Totally Agree). The higher the values for each one of these items, the more trustful respondents think their leader is.

### **Communication quality**

Communication was measured with (Chidambaram & Jones, 1993) single-factor scale that comprehends 6 items that distribute in a 7 point scale perceptions of communication quality between the direct leader and the respondent or the overall communication of the leader with the respondent's colleagues (e.g. "Good:Bad" or "Difficult:Easy"). The scale has both acceptable convergent validity ( $AVE_{communication}=.590$ ) and high reliability (Cronbach  $\alpha=.858$ ,  $CR=.895$ ). The response scale ranged from 1 (Totally Disagree) to 7 (Totally Agree). The higher the values for each one of these items, the better the perceived communication with the direct leader.

### **Job satisfaction**

Job satisfaction was measured with a single overall item (i.e. "*Generally, how satisfied are you with your job?*") following Wanous, Reichers and Hudy (1997) as well as Nagy (2002) findings that it was a sufficient measure of job satisfaction that compared favorably with multi-item measures as it is strongly correlated with all satisfaction facets as places less burden in survey participants. The response scale incorporated in Qualtrics was a sliding rule with a smiley ranging from 1 (unsatisfied) to 5 (satisfied).

### **Job performance**

Job performance was measured also with a single overall item (i.e. "How would you rate your current job performance?") with a rating sliding rule scale from 1 (very low performance) to 10 (top performance).

### **Sociodemographic variables**

Sociodemographic variables comprehended a measure of age (1=below 20 years-old, 2=20-24 years old, 3=25-34 years-old, 4=35-44 years-old, 5=45-54 years-old, 6=55-64 years-old, 7=over 65). Gender (dummy coded as 1=female, 2=male). Education (1 = less than high school, 2= high school, 3= some college, 4=undergraduate, 5=graduate). Professional tenure 8years working experience, 1=below 1 year, 2=1-3, 3=3-5, 4=5-10, 5=11-15, 6=16-20, 7=21-25, 8=over 26 years working experience). Lastly, we asked if the respondent had any management position (1=No) and at which level of managerial was placed if so (2 = "I am a supervisor", 3="I am an executive manager").



### **Remoteness**

Remoteness refers to the extent the relationship with the leader is taking place on a face-to-face and/or virtual basis. This is indicated by the respondent's estimate on the percentage of communication with the respective direct leader that is done remotely / electronically. The answer is registered 100% scale, where a control variable was used to remove all of those that fail to acknowledge that they mainly communicate virtually with their respective leader.

### **Control variable**

As a control variable for inclusion in the sample, we started the questionnaire by asking whether the respondent was a part of a team that communicates mainly via an IT medium (e.g. skype, WebEx, email, slack or any other virtual communication software). All respondents that opted to state their main channel of communication in the team and the leader was not via an IT medium were not eligible for the study.

### **Sampling procedure**

As the survey relies heavily on the prior experience of the participants, a homogeneous sampling method was implemented. For such a method, the participants need to share a common trait, in this case, their participation in a virtual team. By this, the characteristic is consequently examined in detail (Etikan, Musa, & Alkassim, 2016). After establishing the questionnaire, a pre-test was done, which ensured, that the questionnaire would be easily accessible. Afterward, the questionnaire was launched online, to increase its reach. The questionnaire was posted on multiple social media pages and showed to many other people within the network of the author.

## IV. Results

Results start by showing descriptive statistics as well as bivariate analyses (Table IVa).

Table 1- IVa – Descriptive and bivariate analyses

	Min-max	Median	sd	1	2	3	4	5	6	7	8	9	10
1. Gender	1-2	-	-	1									
2. Age	20-64	-	-	.286	1								
3. Education	-	-	-	-.071	-.138	1							
4. Occup. Tenure	<1 - >26	-	-	.328*	.878**	-.238	1						
5. Manag. position	-	-	-	.465**	.597**	-.094	.635**	1					
6. TL_IC	2.17-7	5.62	.96	-.084	-.222	.082	-.303*	-.092	1				
7. TL_IS	2.33-7	5.31	.96	-.317*	-.111	.002	-.057	-.121	.660**	1			
8. Communication	3.33-7	5.51	.86	.029	.012	.147	.043	.020	.564**	.443**	1		
9. Trust	2.13-7	5.40	.99	-.173	-.016	.139	-.060	-.045	.683**	.593**	.677**	1	
10. Job performance	2-10	7.33	2.04	-.011	.227	.241	.336*	.197	-.232	-.031	.076	.024	1
11. Job satisfaction	2-5	4.20	.71	-.030	.258	.048	.297*	.153	.038	.152	.324*	.236	.474**

The descriptive analysis indicates the overall averages are considerably high, falling in the upper levels of the scales. It is worth noting that job performance was by far the most diverse variable with a standard deviation of 2 on a 10 maximum scale. This is especially interesting when one considers the average of 7.33. Bivariate correlations revealed that in this particular sample men tend to have higher professional tenure and higher hierarchical management positions than the participating females. Amongst demographic variables only in three cases did we found significant correlations, namely between gender and intellectual stimulation ( $r = -.317, p < .05$ ) where women report higher perceived intellectual stimulation from their respective leaders than men. Also, professional tenure also tends to correlate negatively with individual consideration ( $r = -.303, p < .05$ ) suggesting older tenured individuals tend to perceive less individual consideration from their leaders. Conversely, professional tenure correlated positively with job performance ( $r = .336, p < .05$ ) suggesting older tenured individuals report own performance at higher levels than less tenured individuals. We considered these findings of interest although they are not central in the research problem under study. However, they should be kept in mind when discussing results.

As regards variables under focus, the bivariate correlations highlighted relevant associations. Namely, that transformational leadership dimensions (individual consideration and intellectual

## Predictor of positive e-leadership

stimulation) did correlate highly with two core variables in the model: trust (minimum  $r=.564$ ,  $p<.01$ ) and communication (minimum  $r=.443$ ,  $p<.01$ ), as we were expecting them to. Findings also show trust and communication to be strongly correlated ( $r=.677$ ,  $p<.01$ ). At a lesser magnitude, the correlation between communication and job satisfaction ( $r=.324$ ,  $p<.05$ ) emerged. Lastly, job satisfaction did correlate significantly with job performance ( $r=.474$ ,  $p<.01$ ) although we did not focus on that specific relationship in our model. Overall, the correlations are encouraging about finding the hypothesized relationship in the model.

Table 2 - IVb - Age

		<b>Age</b>			
		Absolut number	Percentage	Percentage valid	Percentage cumulated
Value	20-24	10	20.0	22.7	22.7
	25-34	19	38.0	43.2	65.9
	35-44	5	10.0	11.4	77.3
	45-54	5	10.0	11.4	88.6
	55-64	5	10.0	11.4	100.0
	Total	44	88.0	100.0	
Invalid		6	12.0		
Total		50	100.0		

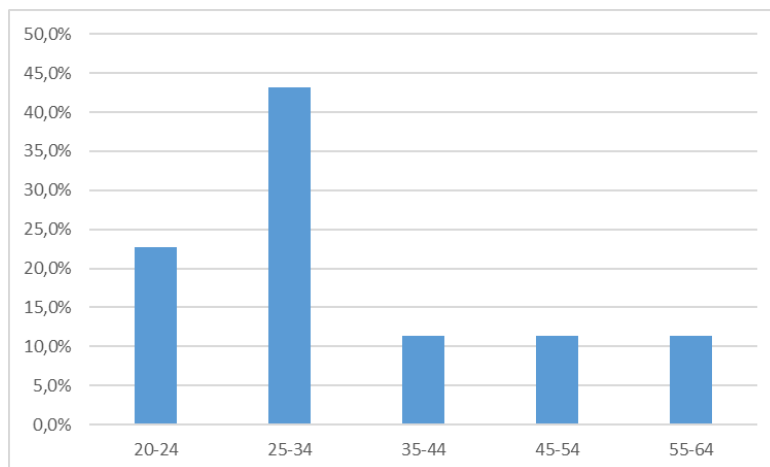


Figure 2 - IVb - Age

## Predictor of positive e-leadership

Table 3 – IVc - Education

### Education

		Frequency	Percentage	Percentage valid	Percentage cumulated
Valid	Less than high school	1	2.0	2.2	2,2
	High school	2	4.0	4.4	6,7
	Some college	4	8.0	8.9	15,6
	Undergraduate	5	10.0	11.1	26,7
	Graduate	33	66.0	73.3	100,0
	Total	45	90.0	100.0	
Invalid		5	10.0		
Total		50	100,0		

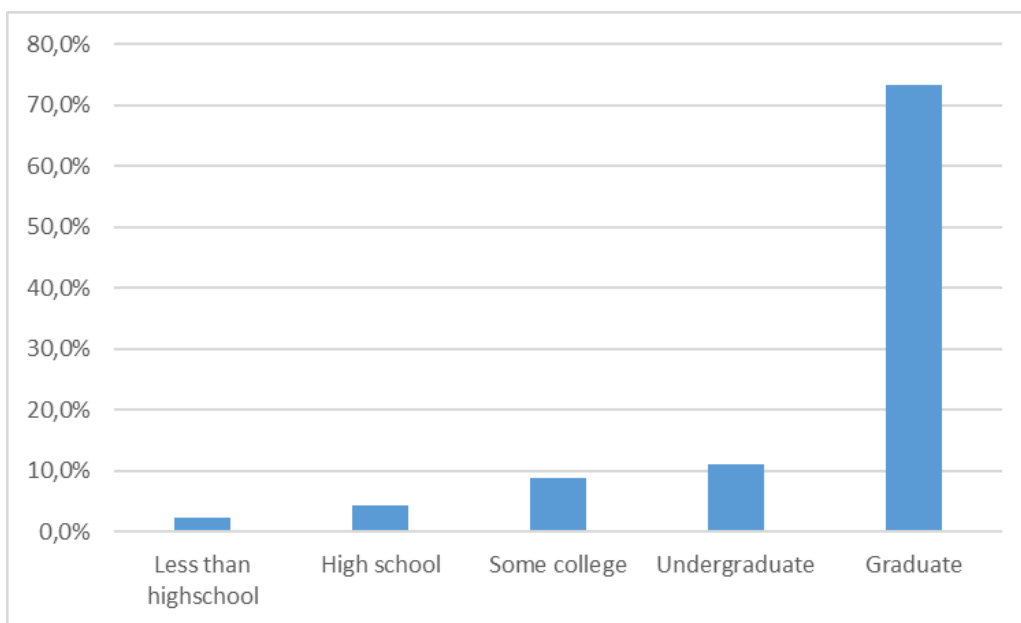


Figure 3 – IVc - Education

Predictor of positive e-leadership

Table 4 – IVd – Work experience

**Years working**

		Frequency	Percentage	Percentage valid	Percentage cumulated
Value	<1	7	14.0	15.6	15.6
	1-3	11	22.0	24.4	40.0
	3-5	6	12.0	13.3	53.3
	5-10	4	8.0	8.9	62.2
	11-15	7	14.0	15.6	77.8
	16-20	1	2.0	2.2	80.0
	21-25	3	6.0	6.7	86.7
	>26	6	12.0	13.3	100.0
	Total	45	90.0	100.0	
	Invalid	5	10.0		
Total	50	100,0			

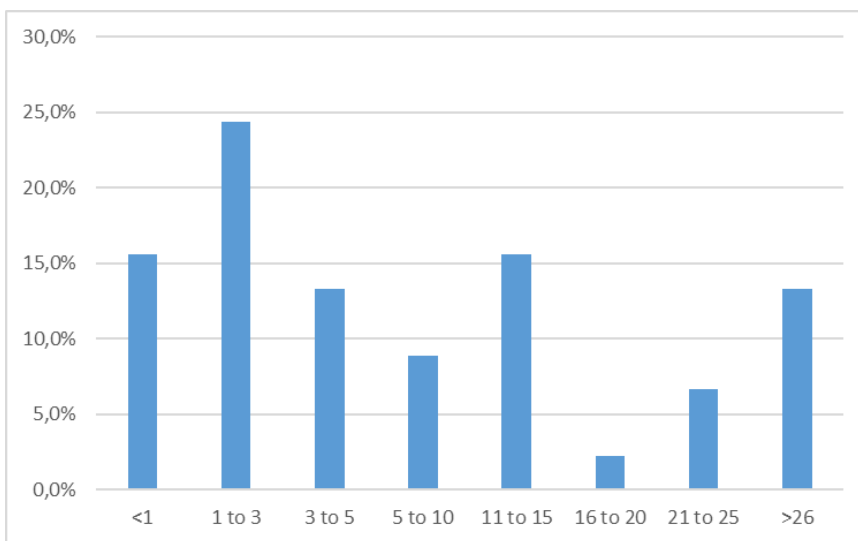


Figure 4 – IVd – Work Experience

Adding to the bivariate analyses, but at a more rigorous level, we conducted PLS-SEM analyses as stated in the data analysis strategy section. As a first finding, we noticed that fit indices do offer assurance that the model is acceptable. The average path coefficient (APC=.256, p=.0013) is doubtfully significant for a 99% confidence interval which means the model does incorporate a set of relations between the constructs that have low coefficients of association. This was expectable because one of the dimensions of transformational leadership (intellectual stimulation) was not really expected to show a significant association with trust or



## Predictor of positive e-leadership

communication (we theoretically expected the null hypothesis not to be rejected for this specific dimension). If we remove this construct from the model, the APC increases up to the level of being significant ( $p < .001$ ) which is in line with our expectation for the model hypothesized. Thus, the full model explains 31.6% average variance (ARS,  $p = .004$ ) that, adjusted, falls down to 28.8% (AARS,  $p = .007$ ).

Despite the large explained variance of trust in leader ( $R^2 = 75\%$ ), we found no indication of multicollinearity, neither horizontal nor vertical (FVIF for all components is 3.333, Average VIF=1.603; Average Full VIF=2.180) which fall well below the ideal value of 3.3 and are truly far from the upper acceptable threshold of 5. The model has no Simpson paradox issues (a paradox occurs when data has such a distribution that when considered in separate groups, the association may assume a significant  $p$ -value and a positive valence, while when one puts all groups together, the association may become negative and with significant  $p$ -value) as  $SPR = .889$  above the .700 threshold for acceptance and the Tenenhaus Goodness of fit is very large (GoF=.485).

Coefficient paths and their respective  $p$ -value are shown in figure IVe (next page). Because there are mediations predicted in the model, Table IVf shows the direct effects, table IVh shows the interaction effects, and table IVi shows the indirect effects and its respective  $p$  values.

Table 5 - IVf - Direct effects

Path	Direct effect	$P$ value	Hypothesis
IC->Com	.430	.001	H1a 
IS->Com	.188	.080	H1b 
IC->Trust	.397	.001	-
IS->Trust	.120	.189	-
Com->Trust	.510	.001	-
Trust->JPerf	.311	.008	-
Trust->JSat	.266	.021	-

## Predictor of positive e-leadership

Table 6 - IVh - Interaction effects

Path	Direct effect	<i>P</i> value	<i>Hypothesis</i>
IC*Remote->Com	-.053	.351	H2a <b>X</b>
IS*Remote->Com	.030	.415	H2b <b>X</b>

Predictor of positive e-leadership

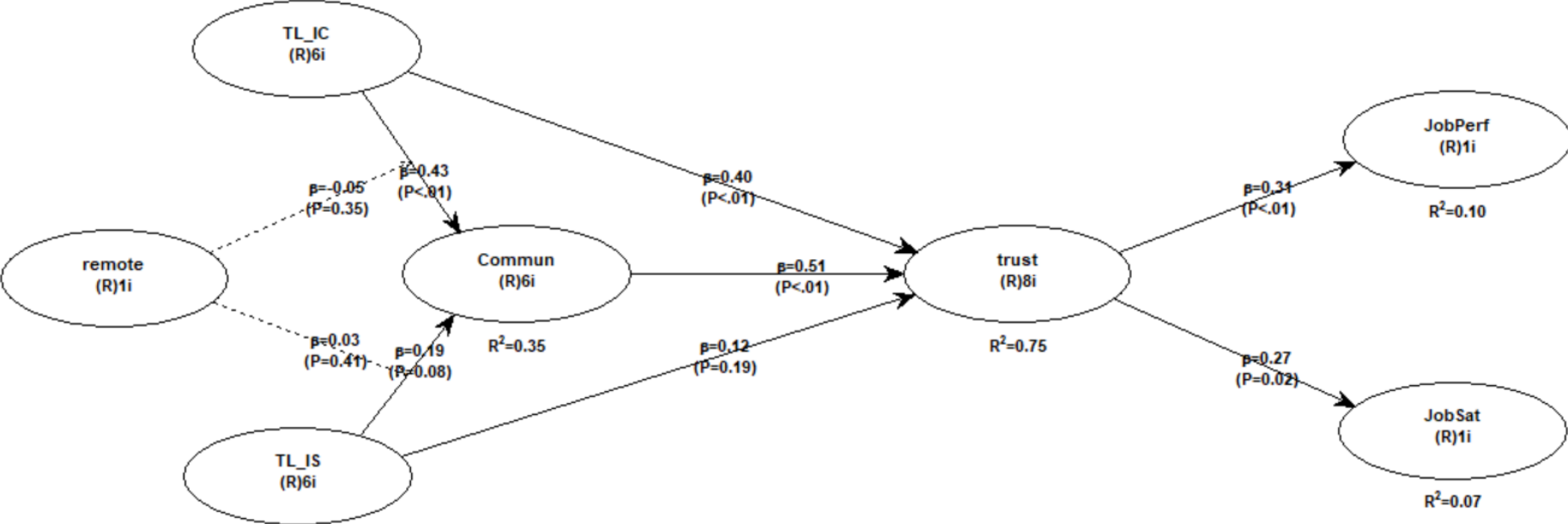


Figure 5 – IVe – Research Model (Results)



Table 7 - IVi – Indirect effects within the full model

Role	Path	Indirect effect	P-value	Hypothesis	
Trust as mediator (H3)	Com->Trust->JPerf	.159	.049	H3a	✓
	Com->Trust->JSat	.136	.080	H3b	✗
Communication as mediator (H4)	IC->Com->Trust	.219	.010	H4a	✓
	IS->Com->Trust	.096	.162	H4b	✗
Communication and trust as sequential mediators (H5)	IC->Com->Trust-> JPerf	.068	.197	H5a	✗
	IS->Com->Trust->JPerf	.030	.356	H5b	✗
	IC->Com->Trust->JSat	.058	.234	H5c	✗
	IS->Com->Trust->JSat	.026	.377	H5d	✗

As can be concluded (from table 5 and 7), only hypotheses H1a, H3a, and H4a were supported.

## Discussion and conclusions

Findings overall show most hypotheses did not get empirical support in this study. However, this is also very informative for the research problem under analysis: the processes that transformational leadership enacts in an e-leadership environment with the potential to affect job satisfaction and performance.

As regards Hypothesis 1, which stated a direct effect of both transformational leadership dimensions (individual consideration and intellectual stimulation) on the quality of communication with the leader, only the path linking individual consideration to communication was significant ( $\beta = .43$ ,  $p < .01$ ). This suggests transformational leadership dimensions do not operate in the same manner in building communication quality, This is in line with the findings by Vought (2017) who found, that the dimensions of transformational leadership have very different correlations, to key-leadership aspects. Therefore, overall, hypothesis 1 received partial support.

Hypothesis 2 proposed a boundary condition that is at the core of this thesis research motivation: understand how remoteness (a feature of e-leadership) may interfere with the way transformational e-leadership impacts followers. Contrary to our expectations, no significant moderation effects were found. This suggests that in the specific case of this sample remoteness

## Predictor of positive e-leadership

seems not to change any fundamental process that links leadership with building quality communication between followers and the leader. This is surprising because (Avolio, Sosik, Kahai, & Baker, 2013) stated that virtual communication cannot fully replace face-to-face communication due to its asynchronous nature and due to the diminished effect of non-verbal communication (Berry, 2011). On the other hand, this is also theoretically relevant because it means that extant research on leadership can transfer to e-leadership.

Hypothesis 3 stated a mediation effect between communication quality and job performance via trust. The significant indirect effect (.159,  $p < .05$ ) shows that building trust in the leader should be taken as a strategic objective when betting on communication as a means to improve job performance in the followers. Surprisingly although communication is directly linked to trust ( $\beta = .51$ ,  $p < .01$ ) and trust is directly linked to job satisfaction ( $\beta = .26$ ,  $p < .05$ ), no significant mediation was found for the path linking communication, trust and job satisfaction (indirect effect = .136,  $p = .08$ ). Overall hypothesis 3 received partial support from these findings.

Hypothesis 4 stated a mediation effect between transformational leadership and trust via communication quality. The significant indirect effect (.219,  $p < .01$ ) shows, in a complementary way to the previous hypothesis (H3), that building trust is supported by quality communication with the leader, but only concerning individual consideration, not intellectual stimulation.

This offered a high expectation that the full mediation sequence would operate at least linking individual consideration to job outcomes, thus rendering support to hypothesis 5. However, such was not the case. None of the four possible three-path indirect effects were found to be significant. Even those that departed from individual consideration to job performance (H5a indirect effect = .068,  $p = .197$ ) and job satisfaction (H5c indirect effect = .058,  $p = .234$ ) are non-significant. This may indicate that the full model is missing variables that could improve the path and that were not taken into consideration. Likewise, some measurement options can help to explain this finding such as the choice for measuring job outcomes with a single item each and that we will explore in the study limitations below.

Overall, the model fails to receive strong empirical support from this study. Statistically, significant paths do indicate that the hypothesized model has some grounds to be sustained although not in its entirety. This is also a consequence of including intellectual stimulation as a predictor of leadership outcomes because although the hypothesis was written to state a relationship (the null hypothesis corresponding to no relationship at all) we did have an indication from previous research that this was not expectable to be a significant relationship.

## Predictor of positive e-leadership

However, the key section of the model was functioning in the way it was proposed. The core relation seems to be linking individual consideration to communication, to trust. This mediation (judging from the significant indirect and direct effects are of a partial nature) offers assurance that the data largely matches the most central topics we explored in the literature review. It is especially important that remoteness did not moderate, as already stated. Although there was no theoretical indication that this possible moderation could occur in other paths included in the model (e.g. between transformational leadership and trust) we did test it to find no statistically significant interaction. This also offered security that our model building was not missing any important point as regards the way e-leadership can operate via different processes.

All studies make theoretical and methodological decisions that will always affect their generalizability, validity and other dimensions that are considered when assessing the robustness of scientific research. Such was the case with our sample size. It is rather small. Still, it does not preclude a robust data analysis technique such as PLS-SEM (Hair, Ringle, & Sarstedt, 2011). We believe some of the findings could be due to the small sample size, namely the inexistence of a mediation effect as found in hypothesis 3b where both paths are significantly associated but the two-path model does not show a significant indirect effect. This is probably also a product of our option to measure job performance and job satisfaction with a single item. Although admissible, together with small sample size, it could have built a much larger measurement error than the one safe for the complexity of the SEM model.

Future studies may definitely endeavor to work with a larger sample. Although PLS-SEM is already an established data analysis technique (Hair, Black, Babin, & Anderson, 2010), it does have its critics especially because PLS-SEM is more suitable for formative constructs while our model only included reflective ones. It does not make it unsuitable but it should be a matter of reflection. Likewise, future studies can develop a more complex measure of remoteness as a proxy of distance in e-leadership. The distance can be translated into the psychological distance, physical distance, etc, which we are not certain to cover with such a simple measure. Additionally, some measures were lacking in our model. After data analysis, findings lead us to think that the frequency of interaction with the leader, the sort of decisions that were implied in the remote interactions, the whole emotional states involved in the follower-leader relationship, and team climate and the magnitude of coworker support, the culture, all of these could play an important role in building communication quality and trust within a e-leadership setting. Because the sample was small, we could not test a possible effect where the remoteness has no harmful effect on the benefit that transformational leadership brings until it reaches a

## Predictor of positive e-leadership

certain magnitude, where distance becomes an obstacle. This would constitute a great opportunity for future research.

The research question (“*What predicts good e-leadership?*”) was posed, in order to see, if the new challenges, facing leaders require fundamentally new approaches to our understanding of leadership. New challenges such as virtual teams and therefore e-leadership have an impact on leadership, as proven by Avolio et al. (2000). This thesis extended on that thought and showed, that the challenges are similar, remote or not.

It turns out, that the predictors for good e-leadership are the same for traditional leadership. Individual consideration improves communication quality and therefore trust. This assumption was explained in the literature review in the case of traditional leadership, while the study proofed it to be true in a virtual environment as well. This shows, that many assumptions and proven concepts about leadership can be applied in a virtual environment as well.

If one takes a look at a modern work environment, much of the communication is already done via email, even though the people are physically close. Usually, such behavior is not due to modern types of leadership, but to have the conversation recorded. This serves multiple purposes such as: a reminder of what the discussion was about or in order to prove a point later on. Nevertheless, it can be said, that the way we interact with each other is constantly changing and evolving. But in the end, many principals stay the same, even if its mediated through different mediums.

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## VI. Appendix

### Questionnaire – e-leadership

#### Eleadership\_HenryLeschig

Welcome to my survey! Your collaboration is much appreciated. My name is Henry Leschig, and I am working on my Master's in Human Resource Management and Organizational Consultancy at ISCTE - University Institute of Lisbon. With this survey I intend to collect data to understand leadership in virtual / digital environments, that is, e-leadership where contacts are made via a computer or other IT medium. The survey will require only 3 to 4 minutes to answer. All surveys will be treated with absolute confidentiality and anonymity. The data gathered in this survey will only be used for my thesis.

Please answer the questions truthfully and to the best of your understanding – all answers will be invaluable to my research since there is plenty about e-leadership that is yet unknown.

If you have any questions, please do not hesitate to contact me [hkblg@iscte-iul.pt](mailto:hkblg@iscte-iul.pt) or [henryleschig@hotmail.de](mailto:henryleschig@hotmail.de) or contact my thesis coordinator: Professor Nelson Campos Ramalho, from ISCTE Business School, Lisbon through his email address [nelson.ramalho@iscte-iul.pt](mailto:nelson.ramalho@iscte-iul.pt).

Thank you very much for your time and collaboration!

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Quebra de \_\_\_\_\_  
página

Predictor of positive e-leadership

Q18 In your current work are you part of a team which **communicates mainly via an IT medium** (e.g. skype, webex, email, slack or any other virtual communication software)?

- Yes (1)
- No (2)

Q19 And which **percentage of communication** between you and your leader is done remotely / electronically?

Show this question:

If In your current work are you part of a team which communicates mainly via an IT medium (e.g. skype... = Yes

Please consider your direct leader / hierarchical superior and the interactions you have. Please signal in a scale from 1 (totally disagree) to 7 (totally agree) in which extent the following statements characterize your relationship.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
My virtual leader makes me feel good to be working with him or her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader gives personal attention to members who seem to be neglected.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader expresses his or her appreciation when I do a good job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader is satisfied when the agreed standard of work is achieved.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader trusts project team members individually.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader gives credit when my job is performed well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader gives ideas and forces me to rethink some of my own ideas which I had never questioned before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader enables me to think about old problems in new ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader helps me to look at problems in a new way, which used to puzzle me before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader accepts me for what I am as long as I do my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader shows me how to attain targets decided by me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My virtual leader arouses my awareness about what is really important.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Predictor of positive e-leadership

Apresentar esta pergunta:

If In your current work are you part of a team which communicates mainly via an IT medium (e.g. skype... = No

Q20 Please consider your direct leader / hierarchical superior and the interactions you have. Please signal in a scale from 1 (totally disagree) to 7 (totally agree) in which extent the following statements characterize your relationship.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
My leader makes me feel good to be working with him or her (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader gives personal attention to members who seem to be neglected (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader expresses his or her appreciation when I do a good job. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader is satisfied when the agreed standard of work is achieved. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader trusts project team members individually. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader gives credit when my job is performed well (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader gives ideas and forces me to rethink some of my own ideas which I had never questioned before. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader enables me to think about old problems in new ways. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader helps me to look at problems in a new way, which used to puzzle me before. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader accepts me for what I am as long as I do my job. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader shows me how to attain targets decided by me. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My leader arouses my awareness about what is really important. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Predictor of positive e-leadership

Q20 Trust Please consider your relationship with your direct leader and signal in a scale from 1 (totally disagree) to 7 (totally agree) in which extent you agree with the following statements.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
We would both feel a sense of loss if one of us was transferred and we could no longer work together. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We can both freely share our ideas, feelings and hopes. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We can talk to each other about difficulties at work, we encounter, because we know that the other want to listen. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If we share our problems with each other, we know that the other will respond constructively and caringly. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This person approaches his/her job with professionalism and dedication. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can rely on this person not to make my job more difficult by careless work. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given this person's track record, I see no reason to doubt his/her competence and preparation for the job. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people, even those who are not close friends with this person consider him/her to be trustworthy. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Predictor of positive e-leadership

Q21 Think about the communication between your direct leader and you or your colleagues. Please rate it according with the following dimensions signalling the point that best depicts what you think according with the poles.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Bad
Innaccessible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Acessible
True	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	False
Difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy
Meaningless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Meaningful
Succesful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unsuccessful

JobSat Generally, **how satisfied** are you with your job? (use the slider to indicate your satisfaction by clicking the vertical pointer and dragging it in either direction...)



1 (1)  
2 (2)  
3 (3)  
4 (4)  
5 (5)



## Predictor of positive e-leadership

JobPerf And on a scale from 0 to 10 how would you rate **your current job performance**? That is, how satisfied are you with your own job performance? (use the slider to indicate your satisfaction)



- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

---

Q15 Lastly, just for sample description purposes, please answer some sociodemographic questions.

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Q17 Gender

- Female (1)
- Male (2)

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Q8 Age

- <20 (1)
  - 20-24 (2)
  - 25-34 (3)
  - 35-44 (4)
  - 45-54 (5)
  - 55-64 (6)
  - >65 (7)
-

## Predictor of positive e-leadership

### Q10 Education

- Less than highschool (1)
  - High school (2)
  - Some college (3)
  - Undergraduate (4)
  - Graduate (5)
- 

### Q12 Years working

- <1 (1)
  - 1-3 (2)
  - 3-5 (3)
  - 5-10 (4)
  - 11-15 (5)
  - 16-20 (6)
  - 21-25 (7)
  - >26 (8)
- 

### Q14 Management position?

- No (1)
  - Yes, I'm a supervisor (2)
  - Yes, I'm an executive manager (3)
- 

Q18 Thank you very much for your contribution! Henry Leschig

Fim do bloco: Bloco de questões por defeito

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Predictor of positive e-leadership