



UNIVERSIDADE CATÓLICA PORTUGUESA

Leadership and Employee Motivation: Exploring the Role
of Virtual Communication

Dissertation to Universidade Católica Portuguesa to obtain
a Master's Degree in Psychology in Business and
Economics

By

Paula Antonia Bruns

Faculty of Human Sciences

September, 2024



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Acknowledgments

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Abstract

This study explores the relationship between virtual communication, leadership, and employee motivation, emphasizing the roles of autonomy, competence, and relatedness as outlined in the Self-Determination Theory (SDT) and six key leadership functions essential for team success, based on the Functional Leadership Approach (FLA). Data were gathered through an online survey of 190 participants. While significant correlations were found between motivation and leadership effectiveness, the assumption that virtual communication directly impacts employee motivation and perceived leadership effectiveness was not supported. Specifically, supporting a positive social climate emerged as a crucial function for addressing all needs. For the need for competence, the leadership function of "establishing expectations and goals" was identified as particularly significant.

Notably, gender differences emerged, with male participants reporting lower satisfaction in specific leadership functions, suggesting possible gender-based preferences in virtual work environments. The study reveals that while virtual communication has a limited direct effect on employee motivation and leadership effectiveness, it highlights the crucial link between leadership and motivation. The strong correlation between effective leadership and the fulfillment of employees' psychological needs underscores the vital role leadership plays in driving motivation. Although virtual communication alone did not show a significant direct impact, there is a possibility that certain leadership behaviors may promote greater motivation in virtual environments. Importantly, future research should explore the mechanisms through which virtual communication can positively impact motivation and leadership effectiveness, as this remains a key area for understanding how virtual environments can enhance employee engagement and performance across different cultural and organizational contexts.

Keywords: virtual communication, remote work, leadership, employee motivation, teams, effectiveness, gender

Resumo

Este estudo explora a relação entre comunicação virtual, liderança e motivação dos colaboradores, com ênfase nos papéis de autonomia, competência e relacionamento, conforme descritos na Teoria da Autodeterminação (SDT), e em seis funções-chave de liderança essenciais para o sucesso da equipa, com base na Abordagem Funcional de Liderança (FLA). Os dados foram recolhidos por meio de uma pesquisa online com 190 participantes. Embora tenham sido encontradas correlações significativas entre motivação e eficácia da liderança, a suposição de que a comunicação virtual impacta diretamente a motivação dos colaboradores e a eficácia percebida da liderança não foi confirmada. Notavelmente, surgiram diferenças de género, com os participantes do sexo masculino relatando menor satisfação em funções específicas de liderança, sugerindo possíveis preferências baseadas em género em ambientes de trabalho virtuais. O estudo revela que, embora a comunicação virtual tenha um efeito direto limitado na motivação dos funcionários e na eficácia da liderança, destaca a ligação crucial entre liderança e motivação. A forte correlação entre liderança eficaz e a satisfação das necessidades psicológicas dos funcionários reforça o papel vital que a liderança desempenha na motivação. Embora a comunicação virtual por si só não tenha mostrado um impacto direto significativo, há a possibilidade de que certos comportamentos de liderança possam promover uma motivação maior em ambientes virtuais. É importante que pesquisas futuras explorem os mecanismos pelos quais a comunicação virtual pode impactar positivamente a motivação e a eficácia da liderança, já que essa é uma área fundamental para entender como os ambientes virtuais podem melhorar o engajamento e o desempenho dos funcionários em diferentes contextos culturais e organizacionais.

Palavras-chave: comunicação virtual, trabalho remoto, liderança, motivação dos colaboradores, equipas, eficácia, género

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List of Abbreviations

SDT	Self Determination Theory
FLA	Functional Leadership Approach
TL	Team Leader
TM	Team Member

1. Introduction

In the wake of the sweeping global impact of the Covid-19 pandemic, the paradigm of remote work has surged to prominence, reshaping the landscape of organizational dynamics and employee engagement. Remote work has become a global trend and is indispensable for many people. A notable proportion of the workforce now actively seeks and values the option of remote work. This preference is motivated by several factors, including time and cost savings, enhanced convenience, flexibility, improved work-life balance, and perceived increases in productivity and overall satisfaction (Ozimek, 2020; Flores, 2019). But not only employees, but also companies are discovering advantages in embracing mobile work arrangements, including reduced office space utilization, cost savings, decreased absenteeism and the potential for heightened productivity (Pabilonia et al., 2020).

However, this trend, while initially appealing, is not without its challenges. Notably, certain companies, such as Zoom and Apple (HubbleHQ, n.d.) have begun to pivot away from remote work, seeking to reintegrate their employees into physical office spaces. This raises a critical question: What are the underlying reasons for such a shift?

The consequences of the remote work trend reversal have become evident, with issues such as increased workplace loneliness, lower collaboration, communication and management issues (cf. Ferreira et al, 2021; Lenka, 2021; Williams & Grams 2022). This development has raised concerns among organizations, as a recent empirical investigation has revealed that the challenges inherent in remote work correspondingly result in an approximate 10% reduction in productivity when compared to entirely on-site work arrangements (Barrero et al., 2023). These findings suggest that remote work has not yet reached its full potential in terms of effectiveness.

As technological advancements continue to shape the future of work, remote work is expected to remain a critical aspect of modern employment (Balliester & Elsheikhi, 2018; Ozimek, 2020). Therefore, instead of phasing out this evolving trend, it is crucial for organizations to investigate the factors contributing to its challenges and explore methods to improve its effectiveness.

At the core of addressing these challenges is leadership and psychological needs. Teams have specific needs that must be met to function effectively, and it is the responsibility of leadership to fulfill these needs (Morgeson et al., 2010). Meeting the

fundamental human needs of individuals enables them to reach their maximum potential, and empirical evidence has linked such satisfaction with heightened job performance (Hodzic et al., 2023).

Therefore, this study is dedicated to examining the relationship of leadership and employee motivation. The subsequent step involves assessing how virtual conditions influence these factors. Specifically, it focuses on virtual communication and investigates whether the perceived effectiveness of leadership and employee motivation are influenced by the degree of virtual interaction. The main objective is to 1) advance research in the field of remote work 2) examine the relationship between leadership and motivation and 2) provide practical insights into which aspects managers should prioritize when leading employees in virtual environments by addressing the following two questions:

1. Is the perceived effectiveness of leadership influenced by the extent of virtual communication between a team leader and a team member?
2. Is employee motivation influenced by the extent of virtual communication with the team leader?

While existing research has addressed some challenges of remote work, there remains a significant gap regarding virtual leadership communication, irrespective of whether employees work remotely or not. Furthermore, this study bridges another research gap by integrating two theoretical approaches that have not been combined in prior studies: the Functional Leadership approach (FLA) and the Self Determination Theory (SDT). The FLA outlines 15 key leadership functions that are essential for achieving team effectiveness and meeting organizational objectives (Morgeson et al., 2010). In addition, the SDT (Deci & Ryan, 2002) highlights the importance of satisfying individual psychological needs - autonomy, competence, and relatedness - in fostering motivation and well-being. Given that teams consist of individuals with distinct needs, this dual approach offers a comprehensive framework for understanding both team-level and individual-level leadership dynamics.

The following sections of this thesis are structured as follows: First, a theoretical review of both the FLA and SDT will be presented. Next, the study will explore current literature on the challenges of leading remote teams and employee motivation in virtual

work environments. Based on this review, research hypotheses will be formulated to guide the subsequent data analysis. Finally, the results will be discussed, followed by a conclusion outlining the practical implications and limitations of this study.

2. Theoretical Framework

2.1. Self Determination Theory

This study seeks to investigate individual needs, with a specific emphasis on how the SDT can provide insight into these needs. The SDT, developed by Edward L. Deci and Richard M. Ryan in the 1980s, is a well-established psychological theory that emphasizes the role of three fundamental psychological needs - competence, autonomy, and relatedness - in driving motivation and enhancing well-being. This theory has been widely applied in various contexts, including educational and workplace settings, to understand how these needs influence human behavior and motivation.

According to this theory, motivation for a given behavior is always dependent on the degree to which the three fundamental psychological needs - competence, relatedness, and autonomy - are satisfied. This concept of psychological needs serves as a foundation for understanding how individuals engage with and adapt to new situations, and is essential for studying personality growth and development (Ryan & Deci, 2002).

Competence encompasses the desire to feel proficient and capable in engaging with one's surroundings. It involves a sense of mastery and skill, which enables individuals to confront and overcome challenges. This need is fulfilled when individuals perceive themselves as proficient and successful in their endeavors, leading to a sense of accomplishment and growth. When people feel competent, they are more likely to engage in activities with enthusiasm and persistence, as their confidence in their abilities fuels their motivation and drive to achieve their goals. Competence is not just about executing tasks efficiently; it also involves feeling a sense of progress and achievement, which reinforces one's motivation to tackle new and more complex challenges. Autonomy, on the other hand, pertains to the need for self-determination and the ability to make choices that align with one's personal values and interests. It goes beyond merely being free from

external constraints; it encompasses the experience of volition and ownership over one's actions. When individuals feel autonomous, they are acting in ways that reflect their true selves and are motivated by internal drives rather than external pressures. This sense of autonomy supports greater engagement and commitment to activities, as individuals feel that their actions are self-endorsed and meaningful. Autonomy fosters a deeper sense of purpose and satisfaction, enhancing overall well-being and intrinsic motivation. Relatedness involves the need for meaningful social connections and a sense of belonging with others. It reflects the quality of one's relationships with family, friends, colleagues, and the broader social network. Feeling connected and valued within these relationships is crucial for psychological well-being. Relatedness encompasses not only the importance of being supported by others but also the feeling that one's presence and contributions are appreciated. A strong sense of relatedness provides emotional support, enhances social integration, and fosters a supportive environment, all of which are vital for maintaining motivation and psychological health. Research has consistently shown that fulfilling these three basic needs not only contributes to overall well-being but also influences daily variations in psychological health. For instance, studies have demonstrated that the general satisfaction of each basic need enhances overall well-being and that daily satisfaction with these needs can explain fluctuations in well-being over time (Ryan & Deci, 2002, pp. 23-24). This underscores the importance of understanding and addressing these needs to optimize motivational processes and psychological health.

Needs are seen as innate as not learn and thus a source of motivation. The focus of learning is on interpersonal relationships and coping with the individual's environment as psychological needs, although physiological factors are also recognised. Understanding these needs is essential for comprehending both the nature and the reasons behind goal-directed behavior, as well as the psychological growth that results from pursuing goals (Lindberg & Steinmann, 2023).

Furthermore, the satisfaction of these needs can vary significantly across different cultural contexts. Cultural values and practices shape how people experience and fulfill these needs, meaning that the relationship between specific behaviors and the satisfaction of underlying needs can differ based on culturally endorsed values and practices (Ryan & Deci, 2002, p. 26). Therefore, understanding these cultural variations is essential for applying the SDT effectively in diverse settings.

In the workplace context, the SDT offers valuable principles for developing initiatives, practices, and environments that enhance both employee well-being and performance. This framework helps in understanding how different workplace strategies can impact employee motivation and satisfaction. Every measure within an organization can either support or hinder these fundamental psychological needs. To enhance the work environment, it is crucial to analyze any practice based on its ability to meet several key criteria. Effective practices should enable employees to develop their skills and gain confidence in their abilities. Employees need to feel skilled and effective in their roles. They should also provide opportunities for employees to make independent decisions and act autonomously, without experiencing undue pressure or coercion. This includes giving them autonomy over how they perform their work and encouraging them to set their own goals. Additionally, building strong, supportive relationships within the workplace is crucial. This involves fostering a culture of collaboration, respect, and mutual support among colleagues. When procedures align with these criteria employees' basic psychological needs are met, they are more engaged and invested in their work. They tend to support autonomous motivation, enhance overall well-being, increase job satisfaction and drive better outcomes. Conversely, when organizational procedures and practices fail to meet these fundamental psychological needs, they can result in controlled motivation or even a complete lack of motivation among employees. Controlled motivation arises when employees feel pressured into performing tasks, which undermines their sense of autonomy and intrinsic engagement. This pressure can lead to disengagement and a decrease in overall motivation. A lack of motivation, whether due to insufficient opportunities for skill development can lead to a higher experience of stress and dissatisfaction (Deci, Olafsen, & Ryan, 2017). Thus, neglecting these basic psychological needs not only affects individual employees but can also have broader implications for organizational success and efficiency.

In summary, the SDT provides a comprehensive framework for exploring how the fulfillment of competence, autonomy, and relatedness influences motivation and well-being. By examining these needs in both individual and team contexts, this study aims to offer insights into how these fundamental needs can be met to enhance overall engagement, performance, and psychological health across various domains.

2.2. Functional Leadership Approach

This theory is based on the FLQ, as proposed by Morgeson, DeRue, and Karam in 2010, which outlines 15 distinct leadership functions, are crucial for effective team performance. The function stemming from reviewing more than 80 articles and book chapter on this topic that from relevant literature, which ended up in creating 15 different leadership categories. These functions encompass a wide range of leadership activities, providing support to team members (TM) and aligning their efforts with organizational goals. By understanding and applying these leadership functions appropriately, leaders can enhance team effectiveness and achieve common objectives.

The functions outlined by Morgeson, DeRue, and Karam (2010) are divided into two main phases of team performance: the transition phase, which focuses on planning and preparation, and the action phase, which involves task execution and monitoring. In both phases, leadership functions are designed to satisfy the team's needs, help regulate behavior, and ultimately boost team effectiveness.

In the transition phase, leadership activities are primarily aimed at laying the foundation for effective performance. Key leadership functions in this phase include:

1. **Compose the Team:** The selection of TM's with the right mix of skills, abilities, knowledge, and personalities is crucial for team effectiveness. Leaders must ensure that TM's possess both the technical skills required for task accomplishment and the interpersonal qualities needed for collaboration. A well-composed team enhances efficiency, reduces conflict, and improves overall performance.
2. **Define the Mission:** Clearly articulating the team's mission and objectives aligns the team's work with the organization's broader goals. This leadership function involves communicating performance expectations in a clear and compelling way, ensuring that the team has a shared understanding of its purpose. A well-defined mission fosters team focus and commitment, improving goal alignment and task prioritization.
3. **Establish Expectations and Goals:** Setting challenging but realistic goals is one of the most critical leadership functions. Research shows that teams with well-defined

goals outperform those without. By setting clear objectives, leaders provide a roadmap for success that boosts motivation, enhances focus, and encourages accountability among TM's.

4. **Structure and Plan:** Leaders help define how the work will be accomplished by clarifying roles, responsibilities, and workflows. This function includes creating task strategies and determining the timing and coordination of activities. Proper structuring reduces confusion, minimizes redundancy, and increases the team's ability to work efficiently and effectively.

5. **Train and Develop:** Leaders are responsible for ensuring that TM's are skilled and capable of performing their tasks. This involves identifying gaps in team knowledge or capabilities and facilitating training or development activities. Continuous learning and development foster adaptability, which is essential for long-term team effectiveness.

6. **Sensemaking:** Leaders interpret internal and external events that could impact team performance and communicate this interpretation to the team. By helping the team make sense of ambiguous or disruptive events, leaders ensure that the team can respond to changes effectively while maintaining focus and productivity.

7. **Provide Feedback:** Constructive feedback is essential for teams to understand their progress and areas for improvement. By providing regular, timely, and specific feedback, leaders help the team self-regulate and adjust its strategies or behaviors as needed. Effective feedback loops are crucial for continuous improvement, which directly impacts team effectiveness.

In the action phase, the team is actively engaged in performing tasks. Leadership during this phase focuses on task execution, monitoring, and managing the team's interactions with external stakeholders. Key leadership functions in this phase include:

8. **Monitor the Team:** Leaders need to constantly observe the team's progress, processes, and the broader environment. This involves tracking team performance, ensuring that TM's follow the plan, and identifying external factors that could hinder progress. Monitoring helps leaders make timely interventions, ensuring the team stays on track to meet its objectives.

9. **Manage Team Boundaries:** This function involves maintaining the team's connection with the broader organization and managing relationships with external stakeholders. Leaders must protect the team from external distractions and interference while also ensuring that the team receives the resources and support it needs from the organization. Balancing external focus with internal cohesion is key for effective team performance.

10. **Challenge the Team:** Leaders push the team to question assumptions and explore innovative solutions to problems. By encouraging TM's to challenge the status quo and think critically, leaders foster creativity and continuous improvement. This function helps the team avoid stagnation and promotes high-performance standards, which leads to greater team effectiveness.

11. **Perform the Team Task:** Leaders may step in to assist with task execution, particularly when the team is facing challenges or falling behind. This hands-on approach can be essential in high-pressure situations, ensuring that tasks are completed on time and to the required standard.

12. **Solve Problems:** Leaders play a crucial role in diagnosing and resolving issues that arise during task execution. By helping teams navigate complex, unstructured problems, leaders prevent disruptions from derailing team performance. Effective problem-solving ensures that the team maintains momentum and stays focused on its goals.

13. **Provide Resources:** Leaders must ensure that the team has the necessary financial, material, informational, and human resources to accomplish its tasks. Without adequate resources, teams cannot perform effectively. By acquiring and allocating

resources, leaders create a stable environment where the team can focus on its work without distractions.

14. **Encourage Team Self-Management:** Leaders can also promote self-management by encouraging the team to take responsibility for its performance and problem-solving. Teams that are empowered to self-manage tend to be more adaptable, innovative, and resilient in the face of challenges. This leadership approach fosters team autonomy and can lead to higher performance, particularly in dynamic environments.

15. **Support the Social Climate:** This leadership function involves ensuring that the team's interpersonal dynamics are positive and supportive. Leaders must address conflicts, promote trust, and encourage open communication within the team. A positive social climate enhances team cohesion, reduces stress, and increases motivation, all of which contribute to team effectiveness.

These leadership functions, when performed effectively, help teams achieve their goals by aligning their mission, goals, and activities. Leaders ensure that the team remains focused on its objectives, adapts to changes, fosters collaboration, and maintains efficiency. Leadership functions such as sensemaking, problem-solving, and providing feedback help teams navigate dynamic environments and adjust their strategies when necessary. By structuring, monitoring, and managing boundaries, leaders reduce inefficiencies and optimize resource use.

However, the effectiveness of these leadership functions can differ depending on contextual factors such as task complexity, team composition, and organizational culture. Adaptation to these unique challenges is crucial, as the effectiveness of each function can shift based on the team's specific circumstances. For instance, leadership functions like challenging the team or encouraging innovation may be highly effective in creative industries but may not be as relevant in more regulated or routine settings. Similarly, monitoring team performance may be crucial in high-risk environments, but overly close monitoring could hinder creativity in more autonomous teams. Thus, leadership functions must be adapted to the unique challenges and conditions that each team faces. This adaptation is vital because the effectiveness of each function can shift depending on the

context, making flexibility and situational awareness essential for leaders. Leaders who can tailor their approach to fit the team's specific needs and the external environment are better positioned to enhance team performance, promote adaptability, and ensure long-term success.

In summary, these leadership functions enable leaders to meet the evolving needs of their teams at different stages of performance. By effectively performing these functions, leaders can significantly enhance their team's ability to thrive in complex environments. However, the fulfillment of these needs is context-dependent, and leadership must be adapted to the specific circumstances in which the team operates. This adaptability is crucial, as the effectiveness of each leadership function can change based on contextual factors (Morgeson, DeRue, & Karam, 2010).

3. Literature Review

3.1. Motivation Teleworkers and the Role of Leadership

The role of motivation in remote work settings has been extensively explored, with recent research shedding light on its application. This summary will review current studies on motivation among teleworkers through the lens of the SDT, emphasizing the critical role of leadership and managerial support in fulfilling psychological needs for teleworkers. It will examine findings related to each psychological need and introduce initial hypotheses the role of leadership on motivation, derived from these insights.

Psychological needs can be strategically managed to support workers effectively, with leadership playing a pivotal role in this process. The research conducted by Orsini and Rodrigues (2020), grounded in the SDT, provides a framework for how leadership can foster effective virtual environments for educators. While their study does not delve into specific differences in needs satisfaction, it lays an important foundation by underscoring the significant relationship between leadership and psychological needs in virtual contexts. Furthermore, research by Ngamkroekjoti et al. (2022) highlights that environmental factors, effective time management, and rewards are the most influential motivational drivers for teleworkers. In contrast, labor intensity and job security have a lesser impact on

teleworker performance. These findings emphasize the importance of creating supportive work environments and managing time effectively to boost motivation and productivity, rather than concentrating on job security and labor intensity.

With regard to the psychological needs of autonomy, competence, and relatedness in remote work, managers should acknowledge that these needs are highly interdependent. This means that managers must assess which aspect of the SDT may be lacking and provide targeted assistance. When these all needs are met, teleworkers are more likely to experience increased motivation (Lindberg & Steinmann, 2023).

When examining the variations in satisfaction across different needs, numerous studies reveal somewhat different results due to varying mediators and sample specifics. (e.g., Brunelle & Fortin, 2021). However, these studies generally display a similar trend in the satisfaction of teleworkers' needs. Based on these consistent patterns, hypotheses regarding virtual leadership were developed accordingly.

The satisfaction of the need for autonomy showed the highest level of consistency across studies, with most research agreeing that teleworkers experience greater autonomy, regardless of environmental factors. Brunelle and Fortin (2021) found autonomy to be the most strongly satisfied need, compared to competence and relatedness, when examining the differences in need satisfaction between teleworkers and office workers.

Lindberg and Steinmann (2023) affirm this view, highlighting that autonomy is a central element of motivational theory in the virtual environments. Remote work naturally fosters autonomy through flexible working hours, choice of work location, minimal supervision, and increased independence. As a result autonomy is the most effectively satisfied need in remote work environments. However, when management intervenes too actively in supporting autonomy, it can inadvertently lead to "feelings of micromanagement or control" (p. 83). Given that remote work inherently supports autonomy, additional managerial interventions in this area may be redundant. Allowing employees the freedom to work independently is itself a significant form of support that enhances their motivation (Lindberg & Steinmann, 2023).

These findings are consistent with earlier research by Gajendran and Harrison (2007), whose meta-analysis demonstrated that teleworkers experience higher levels of autonomy compared to their office-based counterparts. This clear alignment has shaped my subsequent hypothesis:

H1: The more virtual the communication with the TL, the higher the satisfaction of the psychological need for autonomy.

Interestingly, Brunelle and Fortin (2021) found that remote work is associated with increased satisfaction of all three basic psychological needs of workers. Specifically, their results indicate that telework better satisfies the need for relatedness, which is surprising given that this need typically suffers due to decreased face-to-face interaction and lowered social visibility. This contradicts the assumption that remote work would erode interpersonal connections with colleagues and managers.

However a thorough analysis of the organizational environment revealed that the company was acutely aware of the risks of social isolation for teleworkers. To address this, they introduced several voluntary initiatives within the telework program to enhance social interaction. Based on their findings, Brunelle and Fortin (2021) are “inclined to believe that the practices the organization has put in place to counteract the effects of isolation are effective and contribute to satisfying teleworkers’ need for relatedness“ (p.7).

Their further investigation aligns with other research highlighting the challenges of fulfilling the need for relatedness in virtual environments.

Specifically, Hodzic et al. (2023) explored the negative effects of remote work, which are often associated with social isolation and unmet relatedness needs. They found that employees in mandatory virtual arrangements struggle to satisfy their need for relatedness due to diminished opportunities for interaction and weakened connections with colleagues. This underscores the importance of supervisor support in meeting employees' psychological needs, as those in enforced telework situations have fewer chances to engage with their peers and thus experience reduced social connectedness.

Lindberg and Steinmann (2023) argue that remote work naturally increases physical distance from both the organization and colleagues, which can lead to a diminished sense of connection and reduced feelings of relatedness. Although their study indicates that relatedness might be considered less critical than autonomy and competence - since remote workers voluntarily opt to work from home - the findings emphasize the importance of management implementing supportive measures. These measures should aim to improve employees' feelings of relatedness and facilitate the formation of new workplace

relationships, thereby maintaining overall motivation and engagement, as positive relationships were indeed found as a key driver of motivation. Despite relatedness experiencing the greatest reduction due to remote work, it is not necessarily the factor that requires the most support.

H2: The more virtual the communication with the TL, the lower the satisfaction of the psychological need for relatedness.

Instead, competence was identified as the most critical need to address, requiring the greatest attention, while still ensuring that remote employees maintain a sense of relatedness. Accordingly, managers should prioritize supportive incentives that bolster competence, as deficiencies in this area have the most significant impact on remote workers. According to their findings, remote workers who felt they had adequate information reported higher levels of competence, which consequently led to increased motivation. Therefore, it is crucial for management to implement robust measures that enhance employees' sense of competence to sustain their motivation and engagement. This can be accomplished by providing access to essential information and offering regular feedback, which also helps strengthen employees' connection to the organization (Lindberg & Steinmann, 2023). However, these findings do not indicate a tendency toward an unmet need, but rather highlight the importance of specific factors in fulfilling it. This supports the perspective of the FLA, where Morgeson et al. (2010) emphasized “provide feedback“ as one of the 15 critical leadership functions, serving as a key mechanism for guiding and shaping behavior. Feedback not only helps ensure smooth operations by facilitating task completion, but also fosters a deeper sense of commitment and, in turn, motivation. Additionally, this aligns with the leadership function "provide resources," which underscores the importance of offering informational support to guarantee task success. Providing these resources can enhance motivation, as it signals the value of an individual's work, improves efficiency, and reassures employees that their tasks are achievable.

While Hodzic et al. (2023) did not analyze the fulfillment of the need of competence, they argue that on the long run need for competence might be also affected by telework. Remote work can offer workers the opportunity to work with fewer interruptions, so they can focus on their work and feel in control of their job. In addition, telework can offer

employees more flexibility in managing their work and personal responsibilities, so they can meet the demands of both domains and feel competent in their ability to do so. Satisfying the need for competence through telework can increase employees motivation and well-being both at work and in their personal lives.

Overall, this confirms a positive trend toward greater competence need satisfaction among teleworkers. This aligns with the findings of Brunelle and Fortin (2021), who identified competence fulfillment as the second most satisfied need in telework, and generally higher compared to that of office workers.

Given the somewhat ambiguous findings regarding this need, but with a tendency toward a positive relationship between the satisfaction of the need of competence and remote work (particularly when supported by management), the following hypothesis is proposed:

H3: The more virtual the communication with the TL, the higher the satisfaction of the psychological need for competence.

3.2. Challenges Virtual Leadership

It was notably evident that many studies identified virtual communication as one of the major challenges and drawbacks in the context of remote work. Interestingly, these issues are often linked to insufficient leadership communication. For example, Williams (2022) highlighted various challenges, including communication difficulties, addressing issues, lack of interaction, and a diminished sense of team connection. Lenka (2021) also explored challenges in remote work, focusing on virtual collaboration, such as differences in communication styles, lack of access to technology, trust deficits, delayed responses, and a weakened office culture.

To better understand the specific actions within leadership communication that may pose challenges or be difficult to execute in a virtual context, this research delves into multiple studies on the challenges of leadership in virtual environments. According to the FLA, Morgeson et al. (2010) argued that leadership effectiveness varies based on several factors and posited that in virtual teams, leadership functions like monitoring team performance and setting clear expectations are especially crucial. This is due to the

heightened risk of TM's feeling disconnected from the organization and the team's mission (Morgeson et al., 2010, p. 29). The authors suggested that the functions of leadership are influenced by contextual factors and called for further research in this domain. This view is supported by Pokojski (2020), who identified monitoring remote work and employee performance as major challenges. These insights led to the formulation of the first two hypotheses related to leadership, justifying the focus on the specific leadership function deemed particularly challenging in virtual teams:

H4: TM's whose communication is more virtual with their TL experience less fulfillment of the function "Establish expectations & goals".

H5: TM's members whose communication is more virtual with their TL experience less fulfillment of the function "Monitor team".

While the FLA does not directly address other potential leadership functions in virtual teams, this gap highlights the need for further investigation. To anticipate which leadership functions might be critical for virtual leadership, various studies on the challenges of leading remote teams and remote work in general were reviewed.

Hodzic et al. (2023) have already analyzed different levels of satisfaction with psychological needs in the context of SDT, including leadership's role in this area. Their study showed that poor leadership leads to reduced productivity among remote workers. It underscored the importance of supervisor support in fulfilling psychological needs, particularly the need for relatedness. Inadequate leadership, characterized by a lack of social support and knowledge-sharing, led to feelings of loneliness and social isolation. These findings align with Lenka (2021), who cited reduced office culture as a significant challenge in remote work, as well as Williams (2022), who emphasized a lack of interaction and a weakened sense of team connection. Given the challenge of maintaining social support and the critical role leadership plays in addressing these issues, the following hypothesis was formulated:

H6: TM's whose communication is more virtual with their TL experience less fulfillment of the function "Support social climate".

Lindberg and Steinmann (2023) identified the need for competence as the most important psychological need in a virtual context, significantly influenced by managerial actions. They found that employees who received sufficient information and support felt more competent, which, in turn, significantly boosted their motivation. This was achieved by providing access to essential resources and offering regular feedback. Feedback is crucial for satisfying the need for competence, as it reinforces employees' intrinsic motivation and strengthens their commitment to their roles. Effective feedback provides employees with a clear understanding of their performance, highlights areas for improvement, and acknowledges their achievements (Deci, Olafsen, & Ryan, 2017).

The authors stressed the critical responsibility of leaders to focus on supportive measures in this area. These findings are consistent with Lenka (2021), who highlighted the lack of access to technological tools as a major challenge in remote work. The extent of support provided to remote workers remains a significant challenge, and employers are expected to take on broader responsibilities, such as offering more extensive training and support (Pokojski, 2020).

As this research identified another key challenge for leadership in a virtual context, the following leadership functions were selected, and the corresponding hypotheses were developed:

H7: TM's whose communication is more virtual with their TL experience less fulfillment of the function "Provide resources".

H8: TM's whose communication is more virtual with their TL experience less fulfillment of the function "Provide feedback".

Given the evident challenges and gaps in fulfilling these leadership functions, this research argues that general organizational and planning skills become more difficult in a virtual context. These difficulties stem from the lack of managerial capacity to recognize challenges and adequately structure teams to overcome them. Organizing remote work conditions is one of the most demanding tasks for managers. Leaders are tasked with structuring flexible work arrangements and redesigning existing systems to better support remote employees. This requires new managerial competencies and the development of

outcome-focused management styles, as well as efforts to foster a new organizational culture (Pokojski, 2020).

Additionally, a higher level of work virtuality has been shown to lead to lower job satisfaction, mainly due to inappropriate management techniques (Ferreira et al., 2021). Based on these findings, the following leadership functions were selected, and the corresponding hypotheses were formulated:

H9: TM's whose communication is more virtual with their TL experience less fulfillment of the function 'Structure & Plan'.

4. Empirical Investigation

4.1. Methodology and Data Collection

To explore the impact of virtual communication by leaders on employee motivation, an online quantitative study was conducted between April 26, 2024, and July 31, 2024. Quantitative research is a structured and empirical approach used in the social sciences to measure and statistically analyze variables to uncover patterns and relationships. Unlike qualitative research, which focuses on exploring complex phenomena through descriptive data, quantitative methods allow for the collection and analysis of numerical data, providing a basis for objective and replicable findings. Data was gathered through an online survey administered via the Qualtrics platform. Surveys offer significant advantages in data collection, particularly due to their ability to efficiently reach a wide and varied audience at a relatively low expense. In contrast to conventional offline methods, surveys provide several key benefits (Wagner-Schelewsky & Hering, 2019, p. 789). Firstly, surveys facilitate data collection through the snowball sampling technique, where participants who receive the survey link can share it with others in their network, expanding the participant pool organically. Secondly, digital surveys ensure that responses are instantly available in electronic format, streamlining the data analysis process and minimizing errors that can arise from manual data entry. This immediacy also enhances data accuracy by reducing the likelihood of transmission errors. Additionally, surveys allow for standardized data

collection, enabling researchers to perform statistical analyses and draw comparisons across different variables. Another significant advantage is the ability to conduct surveys anonymously, which can boost response rates and encourage participants to provide candid and honest feedback. Online surveys further enhance the efficiency of data collection by automating the process, reducing human error, and accelerating the overall workflow from data gathering to analysis.

Two key methods were employed to recruit study participants: outreach to individuals within the author's personal network and the use of the crowdsourcing platform Clickworker. The first approach involved contacting potential participants through social media channels such as LinkedIn, Instagram, and WhatsApp, leveraging the author's existing connections to gather initial responses. This method provided direct access to a familiar pool of participants, facilitating quick recruitment with minimal initial costs.

Additionally, participants were recruited via Clickworker, a crowdsourcing platform where individuals are compensated for completing tasks, including survey participation. Clickworker offers several advantages: it provides rapid access to a broad and diverse participant base from around the globe, significantly accelerating the recruitment process. Moreover, the platform allows researchers to apply targeted filters to select participants based on specific demographic characteristics or qualifications, enhancing the relevance and quality of the data collected.

While both approaches - recruiting from a personal network and using quasi-professional survey participants - pose the risk of inattentive responses, several preemptive measures were taken to mitigate this issue. Potential limitations of the sampling methods, including the use of snowball sampling and crowdsourcing, were acknowledged, as these may introduce bias or sampling errors. To minimize such risks, attention checks were included within the survey to ensure that participants were engaged and providing accurate responses.

Therefore, specific items were designed to assess attentiveness, such as questions requiring respondents to select "totally agree" to verify their engagement. Clickworker participants also received monetary compensation, which served as an additional incentive to ensure careful participation. The use of Clickworker also offered considerable technical flexibility, as the platform supports a wide range of survey design options, including complex branching and qualification checks. This flexibility was particularly important

because the survey's initial questions were used to screen participants, ensuring that only those who were currently employed and do not hold a leadership position were included in the final sample. If someone was not employed or a leader at the time of the survey, they were automatically directed to the end of the survey. These combined recruitment strategies optimized participant engagement and data quality, while also providing cost-effective and efficient access to a broad participant pool.

Participants were fully informed about the purpose of the study, the nature of their involvement, and how their data would be processed, in line with ethical guidelines. They were required to click 'I consent' to confirm their voluntary participation before proceeding with the survey. Participation was entirely voluntary, and participants could withdraw at any point without providing a reason. All responses were kept confidential, with no personally identifiable information collected. Data will be securely stored and only used for the purposes of this study, with access restricted to authorized personnel. Participants were also provided with contact information in case they had any questions or concerns regarding their participation or data privacy.

4.2. Measurements

Only scales that had already been used in previous research projects in similar contexts were employed to measure the variables contained in the research hypotheses. This approach offers several key advantages. Firstly, utilizing well-tested scales ensures that measurements are both reliable and accurately capture the intended constructs, thereby enhancing the credibility of the findings. Additionally, the use of established scales provides consistency in measurement across different studies, which facilitates meaningful comparisons with existing research and contributes to the cumulative body of knowledge in the field.

By employing scales that have been refined through prior use, the risk of measurement error is significantly reduced, leading to more accurate results. Furthermore, using pre-existing scales allows for effective benchmarking against prior studies, helping to identify trends, differences, or similarities in findings. This approach also proves to be efficient in terms of resource use, as it avoids the time and cost associated with developing and validating new scales.

The use of well-established scales adds to the overall credibility of the research, demonstrating adherence to recognized standards and practices. Moreover, consistent use of these scales across studies facilitates easier aggregation of data for meta-analysis, which can provide more robust insights and generalizable conclusions.

Employee motivation

The “Basic Psychological Need Satisfaction at Work Scale” (Deci & Ryan, 2000) which is based on the SDT to measure employee motivation. The SDT is widely used in psychology and is therefore regarded in research as a reliable approach to explaining work-related motivation (Deci et al., 2001; Gagne & Deci, 2005; Ilardi et al., 1993). Based on the SDT, the Basic Psychological Need Satisfaction at Work Scale comprises 21 items, which are divided into three subscales (autonomy, competence, and relatedness). The respondents’ answers were recorded on a 7-point Likert scale (1 = not at all true; 7 = very true). The variable scores were formed via the weighted mean using the factor loadings.

Perceived effectiveness of leadership

Various subscales of the “Team Leadership Questionnaire” (TLQ) from the FLA (Morgeson et al., 2010) were used to measure the perceived effectiveness of leadership from the perspective of an employee. The approach has defined a total of 15 leadership functions (from a total of 85 papers that dealt with the topic) which, according to the approach, are crucial for team effectiveness and should therefore be performed by leaders. In line with the central functions of the approach in the context of hypothesis development, not all but only the relevant subscales were used in the study, as the study would otherwise have been far too long, which would have significantly increased the potential for drop-outs among participants. The functions selected were informed by insights derived from the study and the findings on motivation in remote work, as discussed in the previous chapter. The subjects’ responses were measured on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The variable scores were formed via the weighted mean using the factor loadings.

Virtual communication

The final question revolved around measuring the virtuality of communication between employees and leaders. The foundation for this was the “Media, Tasks, and Communication Processes” (Dennis et al., 2008). Specifically, the goal was to capture the extent of virtual communication with the leader. It is important to note that this research approach is limited to examining exclusively the virtual communication between the two individuals in question. However, it did not inquire into whether either of the individuals themselves worked remotely or not. In fact, this means that, in principle, both individuals could be physically present in the office but still communicate via virtual channels. In the measurement approach, participants were asked to indicate how 100% of their time was distributed across various communication channels. The proportion of virtual communication was then calculated by subtracting the proportion of face-to-face communication from the 100%. In addition to the predefined communication types (e.g. e-mail), participants also had the option of specifying “other“ as an alternative category with a free text field. However, as all the types specified there were digital types (e.g. Microsoft Team), “other“ was then also counted as a virtual form of communication.

4.3. Participants

A total of 317 participants were initially recruited during the survey period. After excluding those with incomplete responses (n = 108) and those who failed the attention check (n = 19), the final sample consisted of 190 participants. Of these, 54.2% (n = 103) were female and 45.8% (n = 87) were male. The average age of the participants was 31.40 years (SD = 9.01). A notable reason for the high rate of incomplete responses was that participants who indicated they were not currently employed or identified as leaders were redirected to the end of the survey after answering the first two questions. Regarding occupational status, 72.1% (n = 137) were employed full-time, 12.6% (n = 24) were employed part-time, 14.2% (n = 27) were working students, and 1.1% (n = 2) selected “other” as their status. Experience levels among full-time employees were as follows: 5.8% (n = 11) had less than 1 year of experience, 33.7% (n = 64) had 1-3 years, 21.6% (n = 41) had 4-6 years, 15.3% (n = 29) had 7-10 years, and 23.7% (n = 45) had more than 10 years of experience. In terms of geographic distribution, the sample included 22.6% (n =

43) from Germany, 15.3% (n = 29) from the UK, 15.3% (n = 29) from Nigeria, 5.8% (n = 11) from the US, and 5.8% (n = 11) from India. The remaining 35.2% (n = 67) were from 33 different countries around the globe.

4.4. Data Analysis

Data analysis was conducted using SPSS version 27. The primary research question aimed to examine how various independent variables (predictors) impact different dependent variables (outcomes) (Saunders et al., 2007, p. 52). In this study, the main independent variable was the extent of virtual communication between TM's and their leaders, while the dependent variables were perceived leadership effectiveness and employee motivation. Linear regression analysis was employed to test these relationships and address the research hypotheses. To evaluate the impact of the predictors, two main criteria were considered: the path coefficient and statistical significance. The path coefficient should ideally be positive and exceed 0.10 to indicate a significant effect of the independent variable on the dependent variable (Chin, 1998, p. 320). Statistical significance was assessed using a 95% confidence interval ($p < 0.05$).

An additional regression analysis was performed to determine whether a third variable influenced the relationship between the independent and dependent variables, offering deeper insights into potential conditional effects. A split-sample approach was used, dividing the dataset into subgroups (e.g., full-time vs. part-time and males vs. females) and analyzing the effects separately for each subgroup.

Before conducting the hypotheses testing, descriptive statistics (e.g., means, standard deviations) were calculated to summarize the sample and central model variables. The data were also checked for missing values, which were excluded to ensure accurate results. To explore potential differences in satisfaction with leadership effectiveness and need satisfaction across specific demographics, t-tests were conducted for the dichotomous variables of gender and occupational status.

Furthermore, a correlation analysis was conducted to examine the relationship between the two dependent variables: leadership effectiveness and employee motivation. Despite the primary research focus, this study aimed to analyze the correlation between these two variables, as they had not been tested together in previous research. The focus

here was on the question of what conclusions can be drawn from an unfulfilled need for relatedness, for example, combined with an insufficiency fulfilled leadership function

A common challenge in empirical research is dealing with non-normally distributed data, which can affect inferential statistical tests (Hayes, 2017, p. 97). To address this, inferential statistical analyses in this study utilized a bootstrapping method (Wood, 2005, p. 89). This technique involves generating multiple new samples from the existing data set to reduce the impact of non-normality. Specifically, 1,000 bootstrap samples were created for this analysis.

Another key metric in regression analysis is the coefficient of determination (R^2) (Hair et al., 2018, p. 74), which reflects the proportion of variance in the dependent variable that is accounted for by the independent variables. A higher R^2 value indicates a greater proportion of explained variance. Although thresholds for R^2 vary, Herrmann et al. (2006, p. 61) recommend a threshold of 0.30 for reliable predictions. However, even lower R^2 values can be informative when considered alongside path coefficients.

Prior to testing the hypotheses, the results were assessed for several indicators of reliability and validity. The indicators considered were indicator reliability, internal consistency, convergent validity, and discriminant validity. Each of these aspects is discussed in more detail below.

Indicator Reliability

To verify the measurement theory requirements, the first step involves assessing indicator reliability. Indicator reliability evaluates how effectively the indicators measure a specific construct (Hair et al., 2011, p. 145; Hair et al., 2012, p. 423). This is typically tested through factor loadings. In this study, confirmatory factor analysis was used due to the established nature of the scales, which allows for predefined indicator compositions. A commonly accepted threshold for factor loadings is 0.70 (Chin, 1998, p. 320). Factor loadings reflect the strength of the correlation between an indicator and the construct it measures; higher loadings indicate a stronger correlation and a greater contribution of the indicator. When calculating the constructs, the weighted mean was used, with factor loadings serving as weighting factors. As shown in the right-hand column of Table 1, all

factor loadings were 0.706 or higher. Indicators with loadings below 0.70 were excluded from the analysis (see Table 1).

Internal Consistency

Internal consistency assesses the degree to which indicators of a construct are correlated with each other, reflecting their mutual relationship. This assessment ensures that the results are reliable and reproducible without the need for repeated measurements using the same methods (Bagozzi & Yi, 1988, p. 90). Cronbach's Alpha is the most widely recognized measure for evaluating internal consistency. However, one drawback of this measure is its assumption that all indicators have equal reliability, which may be problematic if factor loadings vary but remain within acceptable limits. As a result, there has been increasing skepticism about relying solely on Cronbach's Alpha (e.g., Cho, 2016, p. 4). To address this, composite reliability has become a more frequently used metric, with a threshold of 0.70 being the standard (Bagozzi & Yi, 1988, p. 90). Table 1 shows that all values in the sample exceed this threshold (≥ 0.880), indicating that the results demonstrate internal consistency.

Convergent Validity

Convergent validity indicates how well a construct accounts for the variance in the indicators used to measure it. This is assessed using the average variance extracted (AVE). Values exceeding 0.50 suggest that the construct explains more variance than is left unexplained by measurement errors (Bagozzi & Yi, 1988, p. 90; Chin, 1998, p. 321; Hair et al., 2011, p. 145). According to the right-hand column of Table 1, all latent constructs have AVE values of 0.594 or higher, confirming convergent validity for all constructs.

Discriminant Validity

Discriminant validity tests whether the indicators used to measure a construct are accurately reflecting that specific construct and not other constructs in the model (Henseler et al., 2015, p. 115). This assessment is crucial, especially when the measurement tools are applied in modified forms, to ensure that the scales function as intended. Discriminant

validity serves as a counterpart to indicator reliability by ensuring that indicators load strongly on their intended construct and minimally on other constructs. One commonly used approach to measure discriminant validity is the Fornell-Larcker criterion (Fornell & Larcker, 1981, p. 39). Discriminant validity is considered established based on this criterion if the square root of the average variance extracted (AVE) for each construct exceeds its correlation with other constructs in the model. The findings, shown in Table 2, indicate that the square roots of the AVEs consistently surpass the correlations with other constructs, thereby confirming the achievement of discriminant validity.

Table 1: *Summary of indicators and measurement model evaluation*

Item	Factor loading	CR	AVE
Basic Need Satisfaction at Work			
<i>Autonomy</i>			
		.858	.602
I feel like I can make a lot of inputs to deciding how my job gets done.	.739		
I feel pressured at work. (r)	eliminated		
I am free to express my ideas and opinions on the job.	.868		
When I am at work, I have to do what I am told. (r)	eliminated		
My feelings are taken into consideration at work.	.713		
I feel like I can pretty much be myself at work.	.775		
There is not much opportunity for me to decide for myself how to go about my work. (r)	eliminated		
<i>Competence</i>			
		.849	.654
I do not feel very competent when I am at work. (r)	eliminated		
People at work tell me I am good at what I do.	.706		
I have been able to learn interesting new skills on my job.	.839		
Most days I feel a sense of accomplishment from working.	.872		
On my job I do not get much of a chance to show how capable I am. (r)	eliminated		
When I am working, I often do not feel very capable. (r)	eliminated		
<i>Relatedness</i>			
		.908	.665
I really like the people I work with.	.857		
I get along with people at work.	.800		
I pretty much keep to myself when I am at work. (r)	eliminated		
I consider the people I work with to be my friends.	.745		
People at work care about me.	.836		
There are not many people at work that I am close to. (r)	eliminated		

The people I work with do not seem to like me much. (r)	eliminated		
People at work are pretty friendly towards me.	.836		
Leadership Functions			
<i>Establish expectations and goals</i>		.954	.696
Defines and emphasizes team expectations.	.836		
Asks team members to follow standard rules and regulations.	eliminated		
Communicates what is expected of the team.	.840		
Communicates expectations for high team performance.	.780		
Maintains clear standards of performance.	.857		
Sets or helps set challenging and realistic goals.	.847		
Establishes or helps establish goals for the team's work.	.861		
Ensures that the team has clear performance goals.	.858		
Works with the team and individuals in the team to develop performance goals.	.816		
Reviews team goals for realism, challenge, and business necessity.	.808		
<i>Structure and plan</i>		.925	.671
Defines and structures own work and the work of the team.	.792		
Identifies when key aspects of the work need to be completed.	.819		
Works with the team to develop the best possible approach to its work.	.814		
Develops or helps develop standard operating procedures and standardized processes.	.841		
Clarifies task performance strategies.	.850		
Makes sure team members have clear roles.	.799		
<i>Provide feedback</i>		.919	.696
Rewards the performance of team members according to performance standards.	.819		
Reviews relevant performance results with the team.	.877		
Communicates business issues, operating results, and team performance results.	.832		
Provides positive feedback when the team performs well.	.852		
Provides corrective feedback.	.788		
<i>Monitor team</i>		.880	.594
Monitors changes in the team's external environmental.	.754		
Monitors team and team member performance.	.751		
Keeps informed about what other teams are doing.	.833		
Notices flaws in task procedures or team outputs.	.714		
<i>Provide resources</i>		.937	.749
Obtains and allocates resources (materials, equipment, people, and services) for the team.	.861		
Seeks information and resources to facilitate the team's initiatives.	.903		
Sees to it that the team gets what is needed from other teams.	.881		
Makes sure that the equipment and supplies the team needs are available.	.862		
Helps the team find and obtain "expert" resources.	.817		
<i>Support social climate</i>		.938	.752
Responds promptly to team member needs or concerns.	.794		
Engages in actions that demonstrate respect and concern for team members.	.903		
Goes beyond own interests for the good of the team.	.884		
Does things to make it pleasant to be a team member.	.883		
Looks out for the personal well-being of team members.	.867		

Table 2: *Summary of the evaluation of discriminant validity*

	1	2	3	4	5	6	7	8	9
Autonomy									
Competence	.644								
Relatedness	.750	.620							
Establish expectations and goals	.448	.544	.438						
Structure and plan	.347	.479	.332	.822					
Provide feedback	.499	.496	.450	.780	.784				
Monitor team	.412	.471	.389	.760	.766	.741			
Provide resources	.382	.537	.423	.773	.802	.759	.764		
Support social climate	.509	.525	.541	.792	.744	.806	.745	.794	
Square root of the AVE	.776	.809	.816	.834	.819	.834	.771	.864	.867

5. Results

5.1. Descriptive Statistics

With regard to the central variables, the distribution of the various forms of communication was first examined. Table 3 shows that 36.063% (SD = 27.720%) of communication takes place classically via face-to-face (non-digital channels). With regard to virtual channels, video conferences (M = 25.326%; SD = 25.660%) and e-mail (M = 18.121%; SD = 17.777%) occupy a prominent position here. The remaining channels only have a minor role to play. Table 3 summarizes the remaining shares of different forms of communication with the supervisor

Regarding the two dependent variables, perceived leadership effectiveness and employee motivation, the following observations were made:

For employee motivation, the three need satisfaction dimensions consistently yielded moderate values on a scale where 7 was the maximum score. The dimension of autonomy had the lowest mean score (M = 4.93; SD = 1.21), followed by competence (M = 5.07; SD = 1.22) and relatedness (M = 5.14; SD = 1.20).

In terms of perceived leadership effectiveness, participants reported generally higher satisfaction on a scale where 5 indicated high perceived effectiveness. The dimension "structure & plan" received the lowest mean score (M = 3.79; SD = 0.91), while "establish expectations & goals" had the highest satisfaction (M = 3.89; SD = 0.90). Table 3 presents

a comprehensive summary of the mean values and standard deviations for these central variables.

Table 3: Means and standard deviation of all variables

	Face-to-face communication	Video conferences	Telephone conferences	WhatsApp	Voice mail	Fax	E-mail	Other
Mean	36.063%	25.326%	6.768%	7.390%	1.184%	.742%	18.121%	4.405%
Standard deviation	27,720%	25,660%	11.808%	13.921%	3.361%	2.518%	17.777%	14.417%

	Autonomy	Competence	Relatedness	Establish expectations and goals	Structure and plan	Provide feedback	Monitor team	Provide resources	Support social climate
Mean	4.931	5.073	5.141	3.894	3.787	3.862	3.835	3.892	3.830
Standard deviation	1.207	1.217	1.196	.897	.911	.917	.805	.941	.991

5.2. Inferential Statistics

An additional aspect of the analysis was to explore potential gender differences in need satisfaction and perceived leadership functions. The most notable gender difference was observed in the need satisfaction dimension of autonomy. Males reported higher satisfaction with autonomy ($M = 5.03$; $SD = 1.10$) compared to females ($M = 4.85$; $SD = 1.29$). However, this difference was not statistically significant (95% confidence interval [CI] = -0.16 to 0.52, $t(187.97) = 1.04$, $p = 0.30$). Similarly, differences based on occupational status were examined, specifically comparing full-time employees with those not employed full-time. The analysis revealed that full-time employees reported significantly higher satisfaction with autonomy ($M = 5.51$; $SD = 1.16$) compared to those without full-time employment ($M = 4.48$; $SD = 1.21$; 95% CI = 0.24 to 1.01, $t(91.21) = 3.23$, $p < 0.01$). No other comparisons reached statistical significance. The mean values, standard deviations, and t-test results for occupational status and gender differences are detailed in Table 4 and 5.

Table 4: Overview of conducted t-tests (gender)

		Mean	Standard deviation	T	Degrees of freedom	P value	Lower value	Upper value
Autonomy	Male	5.028	1.102					
	Female	4.848	1.289	1.036	187.970	.301	-.162	.522
Competence	Male	5.148	1.164					
	Female	5.009	1.261	.786	186.483	.433	-.209	.486
Relatedness	Male	5.177	1.164					
	Female	5.111	1.227	.377	185.453	.706	-.277	.409
Establish expectations and goals	Male	3.892	.818					
	Female	3.896	.962	-.035	187.987	.972	-.259	.250
Structure and plan	Male	3.713	.888					
	Female	3.849	.930	-1.033	185.182	.303	-.397	.124
Provide feedback	Male	3.820	.876					
	Female	3.897	.954	-.579	186.667	.564	-.339	.185
Monitor team	Male	3.760	.744					
	Female	3.899	.851	-1.205	187.778	.230	-.368	.089
Provide resources	Male	3.839	.908					
	Female	3.936	.970	-.707	185.994	.480	-.366	.173
Support social climate	Male	3.771	.960					
	Female	3.880	1.019	-.757	185.769	.450	-.392	.175

Table 5: Overview of conducted t-tests (occupational status)

		Mean	Standard deviation	T	Degrees of freedom	P value	Lower value	Upper value
Autonomy	Fulltime occupation	5.105	1.163					
	No. fulltime occupation	4.479	1.213	3.230	91.210	.002	.241	1.012
Competence	Fulltime occupation	5.146	1.204					
	No. fulltime occupation	4.884	1.240	1.315	92.148	.192	-.134	.657
Relatedness	Fulltime occupation	5.223	1.180					
	No. fulltime occupation	4.928	1.222	1.509	91.703	.135	-.093	.685
Establish expectations and goals	Fulltime occupation	3.886	.909					
	No. fulltime occupation	3.916	.871	-.214	98.345	.831	-.314	.253
Structure and plan	Fulltime occupation	3.730	.936					
	No. fulltime occupation	3.933	.834	-1.455	105.442	.149	-.480	.074
Provide feedback	Fulltime occupation	3.885	.934					
	No. fulltime occupation	3.802	.876	.577	100.381	.565	-.203	.370
Monitor team	Fulltime occupation	3.809	.803					
	No. fulltime occupation	3.902	.813	-.707	93.621	.481	-.353	.168
Provide resources	Fulltime occupation	3.853	.980					
	No. fulltime occupation	3.991	.835	-.969	110.183	.335	-.419	.144
Support social climate	Fulltime occupation	3.826	1.009					
	No. fulltime occupation	3.841	.954	-.095	99.589	.924	-.326	.296

In the final step, the correlations between central variables were analyzed to explore the relationships between the motivation needs and leadership functions. The correlation matrix, presented in Table 6, shows that all reported correlations were significant at $p < 0.01$.

Autonomy was positively correlated with the other psychological needs, competence ($r = 0.644$) and relatedness ($r = 0.750$). Autonomy also showed a moderate correlation with the leadership function “establishing expectations and goals” ($r = 0.448$), and smaller yet positive correlations with the functions “structure and planning” ($r = 0.347$), “providing feedback” ($r = 0.499$), “monitoring the team” ($r = 0.412$), “providing resources” ($r = 0.382$), and “supporting social climate” ($r = 0.509$).

Competence was positively correlated with relatedness ($r = 0.620$) and moderately correlated with the leadership functions “establishing expectations and goals” ($r = 0.544$), “structure and planning” ($r = 0.479$), “providing feedback” ($r = 0.496$), “monitoring the team” ($r = 0.471$), “providing resources” ($r = 0.537$), and “supporting the social climate” ($r = 0.525$).

Relatedness demonstrated positive, moderate correlations with the leadership functions “establishing expectations and goals” ($r = 0.438$), “structure and planning” ($r = 0.332$), “providing feedback” ($r = 0.450$), “monitoring the team” ($r = 0.389$), “providing resources” ($r = 0.423$), and “supporting the social climate” ($r = 0.541$).

The leadership function “establishing expectations and goals” was highly correlated with the other leadership functions “structure and planning” ($r = 0.822$), “providing feedback” ($r = 0.780$), “monitoring the team” ($r = 0.760$), “providing resources” ($r = 0.773$), and “supporting the social climate” ($r = 0.792$).

Similarly, “structure and planning” showed strong correlations with the functions “providing feedback” ($r = 0.784$), “monitoring the team” ($r = 0.766$), “providing resources” ($r = 0.802$), and “supporting the social climate” ($r = 0.806$).

The leadership function “providing feedback” was highly correlated with “monitoring the team” ($r = 0.741$), “providing resources” ($r = 0.759$), and “supporting the social climate” ($r = 0.745$).

“Monitoring the team” also demonstrated strong correlations with the functions “providing resources” ($r = 0.764$) and “supporting the social climate” ($r = 0.745$). Lastly,

the leadership function “providing resources” was highly correlated with the function “supporting the social climate” ($r = 0.794$).

Table 6: *Correlation matrix*

	1	2	3	4	5	6	7	8	9
Autonomy									
Competence	.644**								
Relatedness	.750**	.620**							
Establish expectations and goals	.448**	.544**	.438**						
Structure and plan	.347**	.479**	.332**	.822**					
Provide feedback	.499**	.496**	.450**	.780**	.784**				
Monitor team	.412**	.471**	.389**	.760**	.766**	.741**			
Provide resources	.382**	.537**	.423**	.773**	.802**	.759**	.764**		
Support social climate	.509**	.525**	.541**	.792**	.744**	.806**	.745**	.794**	

Note: All correlations marked with double asterisks (**) are significant at $p < 0.01$

5.3. Hypotheses Testing

In H1, it was assumed that a higher extend of virtual communication between an employee and a leader would lead to a higher satisfaction of the psychological need for autonomy. Looking at the results (see Table 7), the path coefficient indicated a weak impact. However, as this effect not reach a significant level, the hypothesis had to be rejected ($\beta = .021$; $p = .748$).

In H2, where a negative effect of the extend of virtual communication on the satisfaction with the psychological need for relatedness was expected, had to be rejected due to not reaching a significant level ($\beta = -.026$; $p = .709$).

Furthermore, in H3 it was assumed that a higher extend of virtual communication would positively impact the satisfaction with the psychological need for competence. Here, the same as above the path coefficient only indicated a weak impact and did not reach a significant level allowed for an acceptance of the hypothesis ($\beta = .012$; $p = .882$).

The second set of hypotheses concerned the effects of a high extend of virtual communication on the perceived fulfillment of leadership functions. In H4, the hypothesis that virtual communication negatively impacts the function of “establish expectations & goals” was not supported, as the effect was not significant ($\beta = -.048$; $p = .485$). Similarly, H5, H6, H7, H8, and H9 did not show significant effects: H5 on “monitor team” ($\beta = .030$; $p = .675$), H6 on “support social climate” ($\beta = .062$; $p = .359$), H7 on “provide resources”

($\beta = -.025$; $p = .721$), H8 on “provide feedback” ($\beta = -.008$; $p = .892$), and H9 on “structure & plan” ($\beta = -.079$; $p = .273$). In a final step, it is important to evaluate the basic performance of the investigated relationships, particularly taking into account the rejected hypotheses. An important parameter when examining data using regression analysis is, as discussed earlier, the coefficient of determination (R²) (Hair et al., 2018, p. 74). It becomes clear that the extent of virtual communication can only explain a marginal proportion of the variance of the constructs examined. The results outlined are interpreted in the following chapter (with regard to their relevance for scientific and practical target groups) and finally the limitations of the research approach are highlighted. All path coefficients, including their significances and R² values are summarized in Table 7.

Table 7: Path coefficients of structural model

Hypothesis	Path	Standardized path coefficient	Standard error	T-statistics	Coefficient of determination
Effects on motivation					
H1	Extend of virtual communication → satisfaction of the psychological need for autonomy	.021	.003	.292	.000
H2	Extend of virtual communication → satisfaction of the psychological need for competence	.012	.003	.159	.000
H3	Extend of virtual communication → satisfaction of the psychological need for relatedness	-.026	.003	-.356	.001
Effects on leadership					
H4	Extend of virtual communication → perceived fulfillment of “establish expectations and goals”	-.048	.002	-.658	.002
H5	Extend of virtual communication → perceived fulfillment of “structure and plans”	-.079	.002	-1.089	.006
H6	Extend of virtual communication → perceived fulfillment of “provide feedback”	-.008	.002	-.116	.000
H7	Extend of virtual communication → perceived fulfillment of “monitor team”	.030	.002	.417	.001
H8	Extend of virtual communication → perceived fulfillment of “provide resources”	-.025	.003	-.344	.001
H9	Extend of virtual communication → perceived fulfillment of “support social climate”	.062	.002	.854	.004

5.4. Additional Analyses

Given the rejected hypotheses, the analysis raised the question of whether the effects examined could possibly be subject to a moderation effect. Moderation takes place when the relationship between two variables is influenced by a third variable (Hair et al., 2014,

p. 52). The possible moderating variables of interest were the employment status and the gender of the subjects. A possible moderating effect was explored using a split sample approach. To do this, the data set was broken down into subgroups (i.e., full-time vs. non-full-time and male vs. female) and the effects examined were calculated separately for each subsample. With regard to the employment status of the participants, it can be said that there were no signs of effects. In the group of full-time employees, none of the p values fell below .369 and in the group of non-full-time employees, none of the p values fell below .627. In both groups, all effects were well below a 95% confidence interval (i.e., $p < .05$).

In the male subgroup, the effect of virtual communication on the function “establish expectations & goals” was negative and could reach a 90% confidence interval ($\beta = -.168$; $p < .10$). The same accounted for the effect of virtual communication on “structure & plan” that was also significant on a 90% confidence interval ($\beta = -.178$; $p < .10$). The p values of all other effects in the male subgroup were equal to or above .391. In the female subgroup, however, no effect could reach a p value equal to or below .254. Table 9 summarizes all path coefficients and significances in both investigated subsamples.

Table 8: Path coefficients of structural model (gender comparison)

	Male subsample			Female subsample		
	Standardized coefficient	Standard deviation	T-statistics	Standardized coefficient	Standard deviation	T-statistics
Effects on motivation						
Extend of virtual communication → satisfaction of the psychological need for autonomy	-.039	.005	-.360	.051	.004	.513
Extend of virtual communication → satisfaction of the psychological need for competence	-.061	.005	-.559	.053	.004	.535
Extend of virtual communication → satisfaction of the psychological need for relatedness	-.083	.005	-.764	.009	.004	.090
Effects on leadership						
Extend of virtual communication → perceived fulfillment of “establish expectations and goals”	-.168	.004	-.1567†	.023	.003	.235
Extend of virtual communication → perceived fulfillment of “structure and plans”	-.178	.004	-.1664†	-.007	.003	-.075
Extend of virtual communication → perceived fulfillment of “provide feedback”	-.031	.004	-.284	.010	.003	.097
Extend of virtual communication → perceived fulfillment of “monitor team”	.011	.003	.102	.050	.003	.504
Extend of virtual communication → perceived fulfillment of “provide resources”	-.085	.004	-.787	.019	.003	.187
Extend of virtual communication → perceived fulfillment of “support social climate”	-.006	.004	-.053	.112	.003	.1136

Note: † significant for $p < .10$; * significant for $p < .05$; ** significant for $p < .01$; *** significant for $p < .001$

6. Discussion

6.1 Summary of Key Findings

In conclusion, the study could not demonstrate that virtual communication leads to greater satisfaction of the psychological needs for autonomy and competence, nor could it show a reduced satisfaction of the need for relatedness. Similarly, no evidence was found to support the hypothesis that virtual communication has a negative association with the fulfillment of the leadership functions “establish expectations & goals,” “monitor team,” “support social climate,” “provide resources,” “provide feedback,” and “structure & plan.” Consequently, all hypotheses had to be rejected. However, when examining additional effects, it was found that gender significantly impacted the leadership functions “establish expectations & goals” and “structure & plan,” with male participants reporting significantly lower fulfillment in these areas compared to female participants.

Regarding the relationship between motivation and leadership, independent of virtual communication, it was shown that all three psychological needs positively correlated with all six leadership functions. The strongest correlations were observed between the leadership functions "structure & plan" and "establish expectations & goals," followed by "support social climate" and "provide feedback“. Among the psychological needs, competence exhibited the strongest correlation with "establish expectations & goals“. Additionally, "support social climate" had the highest overall correlation with psychological needs compared to other leadership functions, with the strongest association observed with the need for relatedness, followed by competence and autonomy. The weakest correlation was between the need for relatedness and the leadership function "structure & plan“.

6.2 Interpretation of Results

This study aimed to investigate the potential impact of virtual communication on leadership effectiveness and employee motivation. While significant and meaningful relationships were found between leadership effectiveness and employee motivation, with all variables showing significant correlations, none of the hypotheses regarding the effects of virtual communication could be confirmed. This also disproved the two central research

questions concerning whether leadership effectiveness and employee motivation are influenced by virtual communication between leaders and employees. These findings suggest that virtual communication alone may not be a decisive factor in shaping employee motivation or leadership effectiveness. Instead, other mechanisms may moderate the fulfillment of these two variables. The lack of effect by virtual communication opens up new avenues for exploration into why this expected influence was not observed. It raises important questions about alternative factors that may play a role in mediating the relationship between leadership and motivation. These potential explanations should be further examined, as discussed in the limitations and future research sections. One notable finding from this study that could serve as a starting point for such inquiry is the role of gender. The results revealed that for male employees, the perceived leadership effectiveness in the functions "establish expectations & goals" and "structure & plan" was less fulfilled the more virtual the communication with their TL, compared to their female counterparts. This could indicate that virtual communication may affect certain demographic groups differently, potentially suggesting that gender plays a moderating role that warrants further investigation.

When interpreting the results for the correlations between motivation and leadership, independent of virtual communication, it was shown that all three psychological needs - autonomy, competence, and relatedness - positively correlated with all six leadership functions. This finding highlights the importance of leadership behaviors in satisfying fundamental psychological needs, which in turn drive employee motivation.

Importantly, while strong correlations were observed between the leadership functions "structure & plan" and "establish expectations & goals," these correlations do not directly relate to motivation. This relationship merely indicates that leaders who are perceived to be effective in setting clear goals also tend to excel in structuring and planning. However, this correlation speaks more to perceived leadership effectiveness rather than any direct impact on employees' psychological needs or motivation. A similar pattern was found for the leadership functions "support social climate" and "provide feedback," suggesting that when leaders are perceived as creating a supportive work environment, they are also effective at providing regular, constructive feedback. Again, this reflects perceived leadership competence but does not inherently indicate a direct influence on employee motivation.

In contrast, the correlations between psychological needs and leadership functions provide a clearer picture of how leadership behaviors influence motivation. For example, competence exhibited the strongest correlation with "establish expectations & goals." This suggests that when leaders set clear, achievable goals, employees are more likely to feel competent and confident in their abilities. This is critical because a clear understanding of expectations can help employees experience success, which is a key driver of motivation through the satisfaction of the need for competence. Notably, the leadership function "support social climate" showed the strongest correlation with all psychological needs, particularly relatedness, underscoring the critical role this function plays in driving motivation. This suggests that employees find it most motivating when their team leader fosters a feeling of connection and belonging within the team and organization. By showing respect, interest, and care for individuals and the group as a whole - beyond self-interest - leaders create a work environment where employees feel valued and connected. This implies that leaders who cultivate a positive and inclusive social climate are especially effective at fulfilling employees' need for social connection. Satisfying the need for relatedness can significantly enhance motivation, as employees feel more integrated, supported, and part of a cohesive team. Moreover, "support social climate" also exhibited notable correlations with the needs for competence and autonomy, suggesting that a supportive work environment not only strengthens social bonds but also boosts employees' sense of self-efficacy and independence, further driving their motivation.

On the other hand, the weakest correlation was observed between the need for relatedness and the leadership function "structure & plan." This suggests that while structured planning is important for performance and goal clarity, it plays a lesser role in fulfilling employees' need for social connection. Structured processes alone may create an environment that fosters efficiency and competence, but they do not necessarily lead to feelings of belonging or interpersonal support. This highlights the need for leadership approaches that go beyond task-related structures to also address the relational and emotional aspects of team dynamics.

In summary, the relationships between psychological needs and leadership functions, unlike correlations between leadership functions themselves, provide valuable insights into how different leadership behaviors can either enhance or hinder motivation by fulfilling the needs for autonomy, competence, and relatedness. While leadership functions like goal-

setting and planning are essential for overall leadership effectiveness, motivation is more directly influenced by how well leaders meet the psychological needs of their employees. Furthermore, the findings suggest that virtual communication may not necessarily have a straightforward impact on motivation and leadership effectiveness. Other factors, such as gender differences, may play a more significant role in moderating these relationships, opening the door for future research into the complex dynamics of leadership in virtual settings.

6.3 Comparison with Previous Research

This study confirmed the general findings of previous research that leadership plays a crucial role in influencing employee motivation positively. However, contrary to expectations and existing literature (e.g., Lindberg & Steinmann, 2023), no significant effect of virtual communication on leadership and motivation could be identified. Several studies have found a notable connection between remote work and employee motivation, suggesting that leadership becomes particularly important in these contexts to maintain and even enhance motivation (cf. Lindberg & Steinmann, 2023 ; Hodzic et al., 2023 ; Pokojski, 2020).

This contrast raises important questions about the difference between remote work as a whole and virtual communication specifically. While previous research often treats these factors as interchangeable, the results from this study indicate that virtual communication alone does not have the same motivating effect. This suggests that other mechanisms must be involved when working remotely, beyond just the nature of the communication between leaders and employees. In fact, while this study hypothesized that virtual communication might act as a substitute for the experience of remote work, it became evident that communication on its own is not a decisive factor for employee motivation. As pointed out by Williams (2022) and Lenka (2021), remote work challenges go beyond leadership communication and include broader organizational and peer interactions, which were not covered in this study. These points warrant further exploration in future research.

The FLA emphasized that specific leadership functions such as "monitoring the team" and "establishing expectations and goals" gain particular importance due to the physical distance between leaders and their teams in remote work contexts (Morgeson et al., p. 29, 2010). However, this study could not identify a significant impact of these

functions when virtual communication was introduced across the entire sample. The only partially significant finding emerged in the "establish expectations and goals" and "structure and plan" function within the male subgroup, where a lower fulfillment was noted compared to females. This partial confirmation of Morgeson et al.'s (2010) assumption is intriguing, as it highlights gender differences in leadership function effectiveness in virtual contexts. Although this pattern was only observed in a specific demographic group, it points to a broader area for exploration. It is well established that men and women can have distinct motivations in the workplace. For instance, previous research shows that men often prioritize instrumental values like financial incentives, while women tend to value interpersonal relationships, respect, and work-life balance more highly. This distinction suggests that men may lean more towards extrinsic motivators, while women are driven by intrinsic factors such as social connection and respect (Vašková, 2006). Gender can influence not only leadership styles but also the expectations and perceptions subordinates have towards their leaders. Other studies have shown that women tend to favor a democratic leadership style, marked by tolerance, understanding, and support, providing employees with greater freedom, less direct supervision, and more empathetic leadership (Górska, 2016). This aligns with findings from Horowitz et al. (2018) which indicate that women are perceived to excel in fostering inclusive and respectful work environments and are seen as more compassionate and empathetic. These qualities are often more highly valued by female employees.

While these gender-based leadership preferences and perceptions offer valuable insights, the degree to which these findings apply specifically to perceptions of leadership effectiveness in a virtual communication context remains uncertain. Nonetheless, the general differences in motivators and leadership styles between men and women provide a promising direction for future research and further investigation into gender-specific leadership dynamics. This opens the door for deeper exploration into how leadership functions may be perceived differently by gender and how virtual communication plays into these dynamics.

Additionally, beyond the scope of virtual communication, the study found a significant positive correlation between the SDT and the FLA. This suggests that need fulfillment is closely associated with the fulfillment of leadership functions. Notably, the strongest correlation was observed between the need for competence and the leadership

function "establish expectations and goals". This was closely followed by the need for relatedness and the leadership function "support social climate". These findings align with previous research highlighting the critical role of managerial support in addressing employees' psychological needs (cf. Hodzic et al., 2023; Lindberg & Steinmann, 2023).

The three psychological needs in SDT - autonomy, competence, and relatedness - are highly interdependent (Lindberg & Steinmann, 2023), which aligns with the present study's findings, showing significant positive correlations across all needs. While this study did not confirm that virtual communication directly influences the fulfillment of autonomy, the results align with other research highlighting the importance of not over-intervening in employees' work to support the need for autonomy (Lindberg & Steinmann, 2023). In this study, autonomy had the weakest correlation with the function "structure and planning," suggesting that employees may feel more autonomous when leaders are less rigid in their structuring of work, tasks, and guidelines regarding how and when the work should be completed.

While this study did not find a clear connection between virtual communication and the insufficient fulfillment of the need for relatedness, previous literature has linked unmet relatedness needs in remote work to reduced social interactions and increased isolation (e.g., Hodzic et al., 2023). However, literature also emphasizes the importance of managerial support in overcoming these challenges through proactive measures. Although much of this previous research refers broadly to managerial support without specifying particular actions, this study found that the highest correlation between relatedness and leadership functions was observed in "support social climate." This makes intuitive sense, as relatedness fundamentally refers to the need to feel connected to others.

Rather than directly establishing a link between virtual communication and the fulfillment of competence needs, this study's results indicate that virtual communication might not play as critical a role as previously suggested. Instead, prior research has consistently identified competence as a crucial need that requires focused leadership intervention (Lindberg & Steinmann, 2023). In this context, information sharing has been recognized as a key managerial action that bolsters feelings of competence. To help employees working from home feel competent and effective, team leaders need to provide clear guidance and structure. Establishing and maintaining timeframes and goals, as well as setting limits, provide a strong basis for employees' sense of competence and self-

efficacy (Orsini & Rodrigues, 2020). This aligns with this study's findings, which showed that competence correlated significantly with all six leadership functions, with the strongest correlation found in "establish expectations and goals," followed by "provide resources". These results underscore the importance of leaders clearly defining, establishing, and communicating expectations and goals, as well as providing the necessary resources and information for employees to feel competent in their roles. Additionally, feedback has been highlighted in the literature as a crucial factor in enhancing the feeling of competence (Deci, Olafsen, & Ryan, 2017). This also aligns with the findings of this study, where "providing feedback" was among the leadership functions positively correlated with competence. Effective feedback not only helps employees understand their performance but also identifies areas for improvement and acknowledges their accomplishments. This responsibility falls heavily on leaders, who must focus on offering supportive measures to foster competence and confidence in their employees.

6.4 Implications for Practice

For managers, these findings on the critical role of managerial support in addressing employees' psychological needs offer several practical implications. They suggest that by enhancing employees' needs for relatedness, competence, and autonomy, managers can ultimately improve employee motivation. The positive relationship between motivation and leadership highlighted in this study indicates that by fulfilling core leadership functions, TLs can not only increase their perceived effectiveness but also meet individual psychological needs, which in turn contributes to higher motivation, well-being, and overall productivity (Morgeson et. al, 2010).

Although the study did not find a significant influence of virtual communication on this relationship, it does not diminish the importance of leadership functions. In fact, the findings reveal that no specific leadership functions or needs are exclusively crucial for virtual settings. Instead, the recommendations that follow are applicable across all types of leadership, whether in remote or in-person environments. This reinforces the idea that leadership practices designed to fulfill employee needs are universally beneficial.

Since all six leadership functions of the FLA correlated positively with the psychological needs defined in SDT, it is strongly recommended to incorporate these six functions into one's leadership style. In a remote work context, it is crucial for leadership in

any form - regardless of whether the work is conducted in-person or virtually - to understand their role in fulfilling employee needs. Meeting these needs contributes significantly to overall motivation, and research shows that higher motivation is often linked to higher performance (Hodzic et al., 2023). Leaders must be aware of this connection and act accordingly. Therefore, the following practices for leadership will be presented to guide managers in enhancing employee motivation through effective leadership styles.

A key leadership function is establishing expectations and goals, which plays a particularly vital role in fulfilling employees' need for competence. Leaders should ensure that goals are clearly defined, realistic, and achievable. This clarity allows employees to understand their roles and contributions to the team, fostering a sense of accomplishment. Leaders must work closely with their teams to set both individual and group goals, offering direction and purpose. This process should also include regular reviews to ensure that these goals remain aligned with the team's evolving tasks and objectives. By providing challenging yet attainable targets, employees can develop a stronger sense of competence and satisfaction in their work (Morgeson et. al, 2010; Lindberg & Steinmann, 2023).

Another critical leadership function is structuring and planning. Leaders need to clearly define the tasks and responsibilities of each team member and establish an organized workflow. This involves identifying key stages of the team's work and ensuring that every member understands their role in the overall process. Leaders should develop or refine standard operating procedures to streamline task completion and minimize uncertainty. Ensuring that team members are aware of the expectations and their specific contributions helps to reduce ambiguity and promotes smoother collaboration, especially in complex or virtual work environments (Morgeson et. al, 2010; Ma et. al, 2024).

Providing feedback is another essential aspect of leadership. Feedback should be timely and constructive, aimed at helping employees improve their performance and understand how their efforts contribute to the team's success. Leaders should regularly review performance metrics and communicate these results to the team, offering both positive reinforcement for achievements and corrective guidance where necessary. Recognizing good performance boosts morale and motivation, while constructive feedback helps employees adjust their approach and enhances their professional growth. The function of monitoring the team involves keeping track of both individual and collective

performance. Leaders should stay informed about the team's progress and any changes in the external environment that might impact the team's work. It is also crucial to monitor how other teams are functioning, as this information can provide insights or opportunities for collaboration. Additionally, leaders need to be aware of any flaws or inefficiencies in the team's processes, so they can make timely adjustments to optimize output (Morgeson et. al, 2010; Lindberg & Steinmann, 2023).

When it comes to providing resources, leaders must ensure that their team has access to all necessary tools, materials, and expertise to complete their tasks. This includes securing physical resources like equipment and supplies, as well as facilitating access to expert advice or additional personnel when needed. Leaders should proactively seek out resources that will support their team's initiatives and make sure that any obstacles to progress are removed (Morgeson et. al, 2010; Lindberg & Steinmann, 2023).

Lastly, the function of supporting the social climate emphasizes the importance of fostering a positive, respectful, and inclusive work environment. Leaders should prioritize responding promptly to team members' needs and concerns, demonstrating genuine care for their well-being. By promoting actions that show respect and concern for each team member, leaders can create a work atmosphere where individuals feel valued and connected to the team. This is especially important in virtual or remote settings, where social cohesion can be more challenging to maintain. Leaders can foster a sense of belonging through regular check-ins, team-building activities, and open channels of communication (Morgeson et. al, 2010; Roberson & Perry, 2022).

To emphasize some of the strongest relationships between employee needs and leadership functions: This study highlights the critical role of establishing expectations and goals in making employees feel competent and confident. Clear and realistic goal-setting is essential for promoting a sense of competence, as it provides employees with direction and a tangible sense of achievement. When leaders prioritize setting clear expectations, they give employees the tools to measure their progress and feel more in control of their tasks, which ultimately boosts their confidence and motivation.

In addition, to mitigate feelings of social isolation and foster a sense of connectedness, the supporting the social climate function is particularly important. This function underscores the need for leaders to cultivate a positive and supportive work environment. Even in virtual teams, where face-to-face interactions are limited, leaders can

actively maintain social cohesion by organizing regular check-ins, team-building activities, and other social opportunities. These efforts help team members feel valued, connected, and included, which enhances their overall sense of relatedness and well-being (Morgeson et. al, 2010; Brunelle and Fortin 2021).

One key recommendation for action in virtual leadership settings is to recognize and address gender-specific differences in how leadership functions are perceived and fulfilled. This study identified that when virtual communication was introduced, men felt that the functions "establish expectations and goals" and "structure and plan" were less effectively met compared to women. These findings suggest that these two leadership functions are particularly crucial for male employees in virtual environments. To address this discrepancy, it is recommended that virtual leaders focus on providing clear, structured expectations and more detailed planning when managing male team members. This could be achieved through more frequent check-ins to clarify goals, ensuring that performance standards are transparent, and offering additional support in organizing tasks. By placing extra emphasis on these leadership functions, virtual leaders can help male employees feel more supported, which may enhance their motivation, engagement, and overall performance. Embracing gender-specific needs in leadership not only improves individual satisfaction and performance but also contributes to a more inclusive and effective team environment, ensuring that both male and female employees thrive in virtual work settings (Roberson & Perry, 2022).

In conclusion, these leadership practices help fulfill employees' psychological needs, enhancing their motivation and performance. Leaders who prioritize clear communication, structured planning, timely feedback, resource provision, and social support will create a work environment that fosters both individual and collective success.

6.5 Theoretical Contributions

This study makes several theoretical contributions to the fields of leadership, motivation, and virtual work dynamics. Although the hypotheses regarding the role of virtual communication were rejected, the study adds to the increasing body of literature by highlighting the complexity of leadership in remote and virtual contexts (cf. Lindberg & Steinmann, 2023 ; Hodzic et al., 2023).

A particularly high theoretical contribution of this study is the integration of two well-established theories—Self-Determination Theory and Functional Leadership Approach. This research marks the first time these two theories have been applied together, revealing significant correlations between psychological needs and six of the leadership functions in FLA. The discovery of these correlations is a major contribution, affirming the relevance of both SDT and FLA in understanding leadership and motivation. It underscores that meeting employees' needs for autonomy, competence, and relatedness through specific leadership behaviors is directly linked to effective leadership. This integration is perhaps the most important theoretical advancement of this research, as it provides empirical support for the alignment between motivation and leadership behaviors.

One of the key theoretical insights is the finding that virtual communication, in itself, does not significantly influence the fulfillment of employees' psychological needs for autonomy, competence, and relatedness. This challenges some existing literature that emphasizes the role of remote work and virtual interactions as critical factors in shaping leadership effectiveness and employee motivation (e.g., Lindberg & Steinmann, 2023; Brunelle & Fortin, 2021). The study suggests that it is not merely the medium of communication but the leadership behaviors and practices within that medium that are essential for motivating employees. This underscores the importance of considering broader contextual factors - such as individual leadership styles, organizational culture, and employee demographics - when examining the effectiveness of virtual leadership.

The significant correlations found between all three psychological needs (autonomy, competence, and relatedness) and the six leadership functions support SDT's premise that need satisfaction is central to motivation. Specifically, the strong correlation between competence and the function "establish expectations and goals" provides empirical evidence for the critical role of goal-setting in fostering employee motivation. Similarly, the high correlation between relatedness and "support social climate" emphasizes the importance of interpersonal relationships in leadership effectiveness.

Moreover, this study introduces a gender dimension into leadership and motivation research in virtual contexts. The finding that male employees report lower fulfillment of leadership functions such as "establish expectations and goals" and "structure & plan" compared to female employees suggests that gender may act as a moderating factor in leadership effectiveness. Studies have shown that female leaders are often perceived as

more effective in transformational leadership, which includes setting clear expectations, providing direction, and motivating teams. Previous research also indicates that women tend to excel in skills related to planning, organizing, and team building, contributing to perceptions of higher leadership effectiveness (Paustian-Underdahl et al., 2014).

While it remains uncertain to what extent gender differences in leadership influence perceptions and preferences regarding leadership effectiveness, this opens up new avenues for theoretical exploration. Specifically, it raises important questions about how gender shapes leadership and motivational dynamics, particularly in virtual work environments where direct interpersonal interactions are limited.

In conclusion, this study contributes to the theoretical understanding of leadership and motivation by challenging assumptions about the role of virtual communication, reinforcing the importance of need satisfaction in motivation, and introducing gender as a potentially significant factor in leadership effectiveness in virtual environments. Most notably, by applying SDT and FLA together for the first time, this research has confirmed the profound and interconnected relationship between motivation and leadership. The results reaffirm how crucial leadership is in fulfilling psychological needs, further illustrating that leadership and motivation are deeply intertwined areas that are essential for employee well-being, motivation, and performance.

6.6 Limitations of the Study

This study presents several limitations that may have influenced the findings. Firstly, the limited research on virtual communication in the context of motivation and leadership may have affected the outcomes of this study. Most findings were derived from research focused primarily on telework status and remote work, rather than specifically addressing virtual communication itself. The underlying assumption that need satisfaction and perceived leadership effectiveness in remote work settings would parallel those who predominantly communicate virtually with their TLs could not be confirmed. Consequently, the hypotheses were built upon insights related to remote work, which may have unintentionally overlooked important distinctions between telework status and the actual extent of virtual communication. This gap may have constrained the study's ability

to draw comprehensive conclusions regarding how virtual communication uniquely influences employee motivation and leadership effectiveness.

Another potential explanation for the study's limitations lies in the diversity of the sample used. As highlighted in previous research, need satisfaction can vary significantly across cultures (cf. Ryan & Deci, 2002, p. 26), and the effectiveness of leadership functions is similarly influenced by a range of contextual factors (cf. Morgeson et al., 2010, p. 29). The sample comprised participants from various countries, each possessing distinct organizational structures, work styles, and values. This cultural diversity may have led to highly varied responses, potentially obscuring any clear patterns or trends that might have otherwise emerged. The interplay between cultural context and motivational dynamics is complex, and the diverse backgrounds of participants might have contributed to inconsistencies in the data, making it difficult to generalize findings across different settings.

Additionally, the length and complexity of the survey might have presented another significant limitation. It required considerable cognitive effort from participants, which may have adversely affected the accuracy and reliability of their responses. Specifically, the survey item asking participants to estimate the percentage of their virtual interactions could have contributed to increased cognitive load. This additional mental effort might have led to inaccuracies in their estimations, as participants were required to process and quantify their experiences rather than respond to straightforward questions. Moreover, it is crucial to highlight that these responses were based on participants' perceptions of their communication experiences rather than objective data reflecting the actual frequency or extent of their virtual interactions with team leaders. Consequently, relying on self-assessments can lead to biases, as individuals may have different thresholds for what is meaningful virtual communication. Furthermore, the variation in participants' familiarity with digital communication tools and their comfort level with self-assessment may have further influenced the reliability of the data collected. Individuals with extensive experience in virtual communication may have interpreted the questions differently than those with less familiarity, leading to discrepancies in responses.

Lastly, this study examined only two of the many existing theories on motivation and leadership - SDT and the Functional Leadership Approach FLA. While these frameworks provide valuable insights into the dynamics of motivation and leadership, the results might

have varied significantly had other theories or models been applied. This limitation underscores the importance of recognizing the multifaceted nature of motivation and leadership, suggesting that a broader theoretical approach could yield different perspectives and findings in understanding the intricate relationships among virtual communication, motivation, and leadership. By exploring additional frameworks, researchers can gain a more nuanced understanding of the variables at play and the unique challenges presented by virtual work environments.

Finally, the analysis employed in this study was correlational, meaning it cannot establish causality. While the relationships identified suggest associations, they do not confirm whether there is impact between the variables studied due to the potential for common method bias (Podsakoff et al., 2003).

6.7 Future Research Directions

Several avenues for future research have emerged from this study. The most important area for exploration is understanding the mechanisms through which virtual communication can impact employee motivation. The current study highlights that virtual communication alone does not significantly affect motivation, but it raises questions about how virtual leadership behaviors might play a more critical role.

To address the limitation of the measurement of virtual communication there are various methods that could be used for future research. Future research should consider utilizing more streamlined survey designs that minimize cognitive load and encourage participants to provide more accurate responses. Additionally, incorporating objective measures of virtual communication, such as tracking actual interaction data through digital platforms, could enhance the validity of the findings and provide a clearer picture of how virtual communication affects employee motivation and leadership effectiveness.

More recent conceptualizations of team virtuality include experienced distance and perceived information gaps as necessary dimensions to study virtuality in teams. It is plausible that similar dimensions could be used in future studies aiming to explore the impact of perceived virtuality on individual and team motivation (Handke, Costa, & Feitosa, 2024). While virtual leadership is often assessed through self-report surveys or questionnaires, an alternative method involves field experiments and longitudinal observations. This approach may track virtual teams over time, allowing researchers to

observe how leadership impacts collaborative processes such as information elaboration and creativity. For instance, in a study examining virtual team creativity, leaders' roles in facilitating information-sharing and fostering a climate of psychological safety were measured. Leadership effectiveness was then correlated with the team's overall creativity and performance. These experiments allow researchers to analyze how leadership behaviors evolve and influence long-term team outcomes. However, these methods require significantly more time and resources, making them less applicable for all research contexts (Wang et al., 2024).

Although not the specific focus of this work, studying the possible mechanisms that might influence the relationship between virtual communication and motivation variables needs further exploration. In this context, leadership dimensions could be examined as potential mediating factors in these relationships. Another example involves quantitative techniques like structural equation modeling (SEM) and latent profile analysis, where researchers create models to test relationships between virtual leadership behaviors and team performance outcomes. Leadership styles may be classified into distinct profiles (e.g., transformational or transactional), and their effectiveness is measured based on outcomes such as team satisfaction, coordination, and success. Leadership profiles may be analyzed to identify which leadership behaviors are most effective in virtual settings (Sanchez et al., 2023).

To address the limitation of correlational research, as previously mentioned, future research could adopt experimental or longitudinal designs to better establish causal relationships by tracking changes over time or manipulating key variables such as the level of virtuality or provided leadership functions. Additionally, using multiple data sources or implementing a time-lagged survey method would help mitigate common method bias and provide more robust evidence of the effects between team virtuality, leadership functions and motivation.

Given that this study primarily examined two theoretical frameworks - SDT and the FLA - it is crucial for future research to explore a wider array of motivational and leadership theories. Expanding the theoretical scope can illuminate different dynamics and outcomes, particularly in understanding how contextual or environmental factors - such as virtual work settings, demographic variations, organizational structures, and team compositions - impact employee motivation and leadership effectiveness. By examining

these contextual variations, researchers can gain deeper insights into the dynamics of effective leadership and how it can be tailored to meet the unique demands of different environments.

Besides studying different contextual factors, future studies should systematically investigate how alternative motivational frameworks influence employee engagement and satisfaction in virtual contexts. For example, integrating Maslow's Hierarchy of Needs could provide insights into how fulfilling basic psychological and self-actualization needs affects motivation within remote teams (McConnell & Metz, 2024; Savolainen, 2022). Similarly, Herzberg's Two-Factor Theory could be explored to understand how intrinsic and extrinsic factors contribute to employee satisfaction and motivation in a virtual environment (Green, 2009; Pitkänen, 2021). The Goal-Setting Theory, developed by Locke, is particularly relevant to the leadership function of establishing goals and expectations; it could shed light on how specific goal-setting strategies can enhance employee motivation and performance (Lunenburg, 2011).

In addition to these motivational theories, examining various leadership styles could also yield valuable insights. The transformational leadership theory, as articulated by Downton, emphasizes the importance of inspiring and motivating employees to exceed their personal interests for the greater good of the organization (Reza, 2019). Conversely, Weber's transactional leadership theory focuses on the exchanges between leaders and followers, highlighting the role of rewards and punishments in shaping employee behavior (Kabiru & Bula, 2020).

These are just a few of the many well-known theories among countless others in the fields of leadership and motivation. By testing, combining and applying a diverse range of these theories, researchers can explore a vast array of possibilities, significantly enriching our understanding of the complexities of motivation and the underlying mechanisms that drive it. For instance, a study examining the motivation of remote employees applied Herzberg's theory and Maslow's Hierarchy of Needs within the context of leadership. The research revealed that communication, the work environment, and leadership practices are critical areas that need improvement to enhance employee motivation. Both theories emphasize that a supportive work environment is fundamental for fostering motivation, highlighting the necessity for sufficient resources and favorable working conditions to achieve this goal (Pitkänen, 2021). A more comprehensive theoretical approach that

encompasses these various frameworks can significantly deepen our exploration of leadership and motivation across diverse organizational and communication contexts. This is particularly important given the evolving nature of work in a digital age, where traditional leadership models may not fully capture the nuances of virtual team dynamics.

Another notable finding from this study is the gender disparity in perceptions of leadership effectiveness when virtual communication is involved. This raises important questions about how gender influences communication preferences, leadership styles, and ultimately, motivation and performance within virtual teams. Future research should delve into these gender-specific differences, examining how they manifest in various leadership practices and employee interactions. Understanding these dynamics could lead to more effective, inclusive leadership strategies that cater to the distinct needs of all team members.

Lastly, cultural factors should not be overlooked in future studies. Investigating leadership effectiveness and employee motivation within a more culturally homogeneous sample or controlling for cultural differences can provide clearer insights into the dynamics at play within specific organizational or national contexts. Cultural norms and expectations significantly shape how leadership is perceived and practiced, as well as how employees respond to different motivational strategies. A focused approach to understanding these cultural influences can enhance the applicability of research findings and lead to more effective leadership practices tailored to diverse work environments.

In summary, these proposed future research directions are essential for advancing our understanding of the complex interplay between leadership, motivation and virtual communication. As remote and globalized work environments continue to evolve, exploring these dimensions will help organizations develop more effective strategies for engaging and motivating their workforce. By embracing a multi-theoretical perspective and studying and considering the diverse factors that influence motivation and leadership, researchers can contribute to creating a more holistic view of how these variables interact, ultimately leading to enhanced employee performance and organizational success.

7. Conclusion

In summary, while this study provides valuable insights into the relationship between virtual communication, leadership effectiveness, and employee motivation, it also highlights several limitations that present opportunities for improvement. The results demonstrate that leadership plays a critical role in fulfilling employees' psychological needs - autonomy, competence, and relatedness - which, in turn, drives motivation. The findings emphasize that leadership is vital in fostering a supportive social environment, regardless of virtual communication levels. However, the limited direct impact of virtual communication on motivation and leadership effectiveness indicates a need for deeper exploration of the mechanisms at play. While virtual communication alone may not be a decisive factor, tailored leadership behaviors in virtual contexts may enhance motivation and improve team dynamics. This highlights the importance of exploring specific leadership practices that effectively influence motivation in virtual settings. Additionally, observed gender differences in leadership perceptions - particularly lower satisfaction among male employees in virtual contexts - point to the need for more nuanced leadership approaches. These variations suggest demographic groups may respond differently to virtual leadership styles, warranting further exploration in future studies. Future research should also test alternative motivational and leadership theories, as a broader theoretical framework could provide new perspectives on virtual leadership. Finally, refining the measures used to assess virtual communication by incorporating more objective data instead of relying solely on self-reports will enhance accuracy and relevance. By addressing these areas, future research can build upon this study's foundations and deepen our understanding of how leadership and virtual communication influence motivation and effectiveness in a remote, globalized work environment.

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Appendices

Questionnaire Qualtrics



Dear Participant,

My current research, developed as part of my **Master's Thesis** in Psychology in Business and Economics at Universidade Católica Portuguesa, aims to study **leadership** and employee **motivation in the context of virtual communication**.

Your participation is voluntary. All responses will be kept **confidential**, and your **anonymity** will be strictly maintained throughout the research process. **By clicking "I consent", you agree** to participate, understanding the information provided. Your legal rights remain unaffected. If you do not consent, please close your browser.

Thank you for taking the time to participate in this survey (**approx. 7 mins**). Your cooperation is highly appreciated. If you have any questions or concerns, please feel free to contact me at s-pbruns@ucp.pt.

Paula Bruns

I consent

Are you currently employed?

- Yes
- No

What best describes your current role in your workplace?

- Team member
- Team leader

Please indicate how true each of the following statement is for you given your experiences on your job during the last year.

	1 not at all true	2	3	4 somewhat true	5	6	7 very true
I feel like I can make a lot of inputs to deciding how my job gets done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really like the people I work with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not feel very competent when I am at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People at work tell me I am good at what I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel pressured at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get along with people at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pretty much keep to myself when I am at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am free to express my ideas and opinions on the job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider the people I work with to be my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been able to learn interesting new skills on my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am at work, I have to do what I am told.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most days I feel a sense of accomplishment from working.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My feelings are taken into consideration at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On my job I do not get much of a chance to show how capable I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People at work care about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are not many people at work that I am close to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I can pretty much be myself at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The people I work with do not seem to like me much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am working I often do not feel very capable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is not much opportunity for me to decide for myself how to go about my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People at work are pretty friendly towards me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate to what extent you agree with the following statements regarding your team leader.

	1 Strongly disagree	2 Somewhat disagree	3 Neither agree nor disagree	4 Somewhat agree	5 Strongly agree
Defines and emphasizes team expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asks team members to follow standard rules and regulations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicates what is expected of the team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicates expectations for high team performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintains clear standards of performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sets or helps set challenging and realistic goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishes or helps establish goals for the team's work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensures that the team has clear performance goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Works with the team and individuals in the team to develop performance goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews team goals for realism, challenge, and business necessity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defines and structures own work and the work of the team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifies when key aspects of the work need to be completed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Works with the team to develop the best possible approach to its work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develops or helps develop standard operating procedures and standardized processes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clarifies task performance strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Makes sure team members have clear roles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rewards the performance of team members according to performance standards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reviews relevant performance results with the team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicates business issues, operating results, and team performance results.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provides positive feedback when the team performs well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provides corrective feedback.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Monitors changes in the team's external environmental.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please click 5: "Strongly agree" to show that you are paying attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monitors team and team member performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keeps informed about what other teams are doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requests task-relevant information from team members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Notifies flaws in task procedures or team outputs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obtains and allocates resources (materials, equipment, people, and services) for the team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeks information and resources to facilitate the team's initiatives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sees to it that the team gets what is needed from other teams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Makes sure that the equipment and supplies the team needs are available.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps the team find and obtain "expert" resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Responds promptly to team member needs or concerns.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engages in actions that demonstrate respect and concern for team members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goes beyond own interests for the good of the team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does things to make it pleasant to be a team member.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Looks out for the personal well being of team members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Regarding the communication between the team and the team leader, please state the proportions of communication channels used in your working environment. Split up a 100% on the mentioned channels. Please note that the sum must be 100%.

1- Face-to-Face	<input type="text" value="0"/>
2- Video Conference	<input type="text" value="0"/>
3- Telephone Conference	<input type="text" value="0"/>
4- What's App	<input type="text" value="0"/>
5- Voice Mail	<input type="text" value="0"/>
6- Fax	<input type="text" value="0"/>
7- E-mail	<input type="text" value="0"/>
8 - Other (please mention which) <input type="text"/>	<input type="text" value="0"/>
Total	<input type="text" value="0"/>

Almost done, now a few final questions about yourself.

How old are you?

Please write the number of years in the field.

How do you describe yourself?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Please indicate your country of origin?

What best describes your occupation?

- Employed full time
- Employed part time
- Working Student
- Other

How many years of professional experience do you have?

- Less than 1 year
- 1-3 years
- 4-6 years
- 7-10 years
- More than 10 years