



SELINUS UNIVERSITY
OF SCIENCES AND LITERATURE

Exploring e Leadership's Impact on Workplace Performance and Engagement

By

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A THESIS

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Selinus University of Sciences and Literature

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1 Chapter 1: Introduction

1.1 Background of the Study

The effects of the COVID-19 pandemic have caused a radical change in organizational operations in a manner that has caused the seismic shift in the dynamics at workplaces. Remote and hybrid work models are requirements of businesses to not lose positions, and those digital technologies were adopted in the shortest possible time and the fastest existing possible. Such transformation has presented emerging challenges and opportunities to organizational leadership. The conventional leadership paradigms, that are over-dependent on the face-to-face interactions, have been forced to adjust to this new environment (Abbu et al., 2022). Other changes of this kind have introduced the concept of e-leadership, which has become dominant as companies have become aware of the need to have leaders who can effectively utilize digital tools to manage leaders working remotely (Amutha and kowser, 2025).

E-leadership is considered to be the capacity to guide and control groups of people online, via video communication, instant messaging, group tools, etc. It entails productivity, engagement and collaboration even at a distance. In contrast to conventional leadership, which is based on personal (face-to-face) communication, e-leadership prefers to go through the twists and turns of virtual workplaces. Success of e-leadership depends heavily on certain skills enabling the leader to use digital communication instruments, establish trust long distance, and display emotional intelligence in virtual environments (Anderson, Potočník and Zhou, 2014). The emergence of e-leadership is directly related to an overall digitalization of organizations. With the increased interest of business in applying digital technologies to their work, the need in leaders who are capable of influencing employees in remote and hybrid scenarios has also emerged (Benitez et al., 2022). In the COVID-19 pandemic the leadership strategies of many leaders had to change to keep the employees engaged and productive. Although the value of e-leadership has become more obvious, the body of scientific knowledge on its influence on the performance of workplaces and engagement of employees is comparatively small. Thus, the proposed study will fill that gap to investigate the impact of e-leadership on workplace performance and engagement within remote work conditions and turn to them during the pandemic (Brown and Wyatt, 2018).

1.2 Problem Statement

The switch to working remotely triggered a huge challenge to organizational leaders. When people moved out of their office environment and began to work in their homes, leaders were required to identify new methods of connecting, motivating and directing their teams (Damas Dominic Suta, 2024). E-leadership emerged as a critical instrument of maintaining employees and keeping them engaged, productive and motivated in the face of challenges presented by the transition to virtual workplace environments (Deci, Olafsen and Ryan, 2017). But, in implementing e-leadership practices, organizations are confronted with a number of issues. The absence of standard models of e-leadership is one of the main challenges. Although the traditional leadership styles have thoroughly been researched and confirmed, e-leadership has not been film-flamme. Most organizations are not ready to adjust their leadership style to the digital world and what ensures e-leadership is not yet reached into a consensus (Dwivedi et al., 2021). The second serious matter is how to sustain the involvement of the employees in virtual environments. Studies have indicated a possibility of feeling alone, burnout and disengagement with remote work. In the virtual world, leaders have to ensure that they can promote cooperation and trust and keep their staff members motivated. Also, team cohesion and maintenance of conflicts may be especially challenging to learn, since the opportunities to meet face-to-face are scarce (Efimov, Harth and Mache, 2020). Moreover, most organizations have implemented the use of digital tools in communication and collaboration, but the benefit of the tools in providing leadership practices remains elusive. The problem is that some leaders might not know how to utilize them, or some will have trouble as the number of channels of digital communication is simply overwhelming. This paper aims at examining the effect of e-leadership on the workplace performance and employee engagement in remote working situations with a special emphasis on the COVID-19 pandemic. It will as well fill the gaps that exist in the current research on the long-term effects of e-leadership on organizational outcome (Eliyana and Sridadi, 2020).

1.3 Scope of the Study

This study is concentrated on the scope of the investigation of e-leadership in distant and mixed work in the COVID-19 pandemic and post-COVID-19. In particular, the study will provide an investigation of the competencies and strategies that should be used in e-leadership within digital workspaces. The research will also evaluate how e-leadership influences the engagement, as well as the motivation and performance of employees at workplaces using virtual environments (Erhan,

Uzunbacak and Aydin, 2022). The study will be implemented based on the qualitative research methods where professionals representing all fields of industry will participate in a semi-structured interview based on their experience of remote leadership. These contributors will give an account of their experience regarding e-leadership and what challenges they have gone through in terms of remote-team management. A review of secondary data like academic literature, renowned research reports and case studies would also be involved in the research to give a wider prospectus to the research results (Ghobakhloo, 2022). Although the subject of the study is e-leadership in remote work, the results can be used in extending the hybrid to the work setting (Irby et al., 2012). The study will also look at the long-term effects of e-leadership on workplace performance and employee engagement to offer information on how organizations can maintain effective leadership practice even as remote working is made permanent in the modern working environment (Huang and Rust, 2018).

1.4 Research Objectives/Aim

The major goal of the present research is to examine how e-leadership influences performance at the workplace and engagement in remote working conditions. The rationale behind the study is to give some insights into how e-leadership can promote the effectiveness of organizations working in virtual environments through the analysis of the approaches and electronic capabilities of leaders.

The particular aims of the study are given below:

1. To calculate the main competency to succeed in e-leadership within remote working setting.
2. To study an interconnection between e-leadership and employee engagement within virtual workspaces.
3. To determine how digital communication tools enhance effectiveness of leadership and the performance of the teams.
4. To detect the issues of e-leaders of preserving cohesion and motivation in their teams within the remote environment.

5. To put forward recommendations on how to enhance the e-leadership behaviors so that work place performance and well being of employees can be addressed where this applies in digital workplace.

1.5 Research Questions

This study aims to answer the following research questions:

1. What are the essential competencies required for effective e-leadership in remote work environments?
2. How does e-leadership influence employee engagement and motivation in virtual workspaces?
3. What role do digital communication tools play in enhancing leadership effectiveness and team productivity?
4. What challenges do e-leaders face in managing remote teams, and how do they overcome them?
5. How can organizations improve their e-leadership strategies to ensure long-term workplace performance and employee well-being?

The questions will lead to the conduct of the research and help to address the areas that the research will cover in regards to e-leadership and its effect on organizational performance and employee engagement.

1.6 Significance of the Study

The importance of this research is that it will be able to provide both theoretical and practical area of knowledge to the field of leadership. First, the research will add to the body of literature that relates to e-leadership that is at its preparatory stages of development. Analyzing the skills that will be needed to successfully guide an organization in the context of e-leadership and the role that can be played by driving and influencing engagement among employees, the proposed research will help to understand the changes that need to be made to leadership to fit it to the digital era (James, Brodersen and Eisenberg, 2004). In practice, this research is important to the organizations that have adopted the remote or a hybrid working pattern. E-leadership continues to gain importance in the contemporary workplace so knowledge of how to go about effective leadership practices within the virtual environment shall be very important to businesses interested in the preservation of productivity, morale and the overall well- being of the employee. The results of the present research can guide organizations to create e-leadership training programs that can

enable leaders to acquire skills essential in dealing with remote working environments (Abbu et al., 2022).

The study will also be of importance in policy formulation especially the policy on leadership training and development. The research will give a consensus on what organizations can do when improving their strategies of e-leadership based on the competencies and strategies that lead to successful e-leadership. The discovery of the study can also be used when developing standardized approaches to e-leadership that leaders may consider when dealing with remote teams (Karakose et al., 2022). Lastly, employee well-being will be a consequence of the study. With the investigation of the impact of e-leadership on employee engagement and job satisfaction, the upcoming research will demonstrate the significance of leadership in providing the positive working environment even in virtual contexts. The contribution of this study to leadership practice learning can be brought into the needs of the modern business that is paying more and more attention to the issue of engagement and retention, which demands the help of innovative management practices aimed at encouraging employees to perform and promote their well-being (Ahmad, 2025).

1.7 Organization of the Study

The structure of this thesis is the following:

Chapter 1: Introduction

This section contains a brief description of the research problem, objectives, its importance and scope. It brings forward the concept of e-leadership and poses the context of the study.

Chapter 2: Literature Review

This chapter briefly reviews the existing literature regarding e-leadership, performance in the workplace and employee engagement. It evaluates the past studies critically and develops literature gaps.

Chapter 3: Research Methodology

This section explains what qualitative research design, data collection procedures, sampling and data analysis techniques would be employed in the study.

Chapter 4: Findings and Discussion

It is the chapter that contains the main findings of the interviews and thematic analysis. It examines the implications of the research, compares the findings with what is available in literature and explores both the challenges and the result of e-leadership in the remote work environment.

Chapter 5: Discussion

This chapter sets out a discussion of the research findings as regards the research questions. It will interpret the results, establish links with the available theoretical concepts, and critically discuss the findings in the light of available literature on the area of e-leadership, remote working, and engagement of employees.

Chapter 6: Conclusions and Recommendations

The main findings of the study are summarized in this chapter; there is also a list of practical recommendations that can be offered to an organization and its e-leaders to better the practices of e-leadership in remote working arrangements. It further presents recommendations on the future studies in this area. Such structure guarantees the rational flow of the ideas and allows the reader to trace the way in which the research is developing between the introduction and the conclusion. There is progression in chapters with the final recommendations on how one can improve e-leadership practices to enhance organizational performance in remote and hybrid work settings.

2 Chapter 2: Literature Review

2.1 E-leadership

E-leadership is usually described as leading ahead of the teams or organisations by utilisation of information and communication technologies (ICTs); the process that comprises of skills to manage and influence other people enabling them to use digital tools like the email, the instant message, video conferences, and collaboration applications (Avolio, Kahai, & Dodge, 2000). Such developments as the growing dependence on digital communication and the popularization of working remotely can explain the emergence of e-leadership. The concept does not only imply the possibility to communicate efficiently in the online reality but also encompasses the emotional intelligence, construction of trust, as well as the capability to keep teams work simultaneously in remote environments (Li et al., 2016).

2.2 E-leadership Theories and Models

E-leadership remains a rather recent phenomenon in the study of leadership, as organizations have found their ways to be adapted to the digital environment and resort to the application of virtual environments more and more frequently to work as teams. The main difference between e-leadership and traditional leadership is that the former deals with the use of digital communication tools by the leader to administer, inspire, and support distributed teams. In the following section, we are going to examine the key theories and models of e-leadership after we have an in-depth view on how leadership practices can be modified to suit the digital era (Luthans and Youssef-Morgan, 2017). Various frameworks identifying behaviors and competencies of e-leadership are constructed. These theories are based on the traditional leadership theories which have been adapted to fit in the digital workplace environment. The following are major theories that have helped in enlightening e-leadership (Ahmed et al., 2022).

2.2.1 Transformational Leadership Theory

Transformational Leadership Theory Transformational leadership theory viewpoints about E-leadership Transformational leadership theory E-leadership is concerned with a transformed society, or a global society. Originally conceived by Burns (1978) with the later elaboration by Bass (1985), transformational leadership theory focuses on leaders with the ability to inspire, motivate and mentally challenge their followers so that they can perform better and grow as human

beings. In comparison to transactional leadership which is reward and penalty-oriented, transformational leadership is more twofold and oriented to the endeavour of inspiring the followers to move beyond their self-interests to achieve the greater good of the organization. This leadership style has gained relevance especially in e-leadership where in most cases, the leaders have to communicate and influence their teams without first hand contact which makes it even more difficult to keep the team in morale and undertaking (Bednall et al., 2018).

In digital work environment, often with limited or no physical presence, transformational leaders are supposed to inspire trust, develop creativity and sense of commitment among team workers. It is the role of these leaders to make sure that remote teams stay together and are motivated and oriented towards the organizational goals. This is achieved by the utilization of digital communication tools, which, in this case, include video calls, emails, messaging programs, and collaboration software. Through effective use of these tools, e-leaders will be able to convey an effective vision which is communicated as well as setting expectations, and feeding back continuously to the team. The process aids in keeping members motivated, increasing their performance and building the feeling of a common purpose, despite team members being in different locations. Central to the discussion of transformational leadership when viewed in the light of e-leadership, is the capability of personalizing communication. The practice will enhance a sense of importance among team members and recognition, which is essential in enhancing engagement in virtual teams (Hamad, 2020). Personalised communication may consist of special feedback, close talks with a person and appreciation of his or her contribution to the party. Leaders also need to show that they are interested in the personal development and the well-being of each team member, especially in a remote environment, where everybody can easily feel isolated. Individual care demonstrates to the employees that they are not mere numbers, faceless conveyors, and they are valuable parts of a group operation, which ultimately brings more involvement and better performance (Kwan, 2020). Transformational leadership by e-leadership has multiple elements that are easy to divide into four crucial ones, critical in the remote working environment:

1. Effective Leaders: The leaders are role models; they exemplify principles, morals, and conduct which team members hope to emulate. Leaders in a virtual environment should be aware of what they ought to demonstrate in order to instill the same quality in their team (Karakose et al., 2022). Leaders should be aspirational and their transparency, integrity, and sense of commitment help

them gain respect and admiration, thus prompting the rest of the team to behave in a similar fashion (Ahmed et al., 2022).

2. Inspirational Motivation: Transformational leaders can speak about the bright future which motivates team members to work. This is even more important in an isolated environment where people lack physical signals. The vision that is shared by the team and the goals of the organization should be communicated by the e-leaders so that they can be motivated to attain a collective cause (Hamad, 2020). Leaders can offer the team members a sense of direction and purpose by ensuring that clear goals are stipulated and correlated with the personal desires.

3. Intellectual Stimulation: Intellectual Stimulation is about leaders encouraging their teams to be creative and solving problems and this provokes them to be more thoughtful and open to fresh ideas. It is more applicable in digital contexts where there is need to be innovative trying to cope with the changing technology and new forms of working (Kwan, 2020). E-leaders should cultivate a climate that allows employees to feel free in trying new things, breaking the established norm and, most importantly, creating innovative ways to resolve issues even when it means working beyond the established parameters.

4. Individualized Consideration: Transformational leaders offer personalized attention to all the team members. In a virtual environment, this aspect of transformational leadership is very important because it will be easier to lose touch with one another. E-leaders must also bother to take time and learn more about the specialties, shortcomings and needs of individual employees (Karakose et al., 2022). Through the provision of specific support, constructive remarks and growth chances, e-leaders demonstrate that they attain value and meaning in the team members.

To sum up, e-leadership transformational leadership is an effective concept of management that guides a team working far apart. Transformational e-leaders can thus enable their teams to be productive, alive, and eager to work, despite being in a virtual situation by creating the feeling of trust, making the team dominant creatively, and ensuring that the change-givers are given unique attention (Amutha & kowser, 2025).

2.2.2 Transactional Leadership Theory

Transactional leadership has its theory based on the interaction of leaders and their followers and postulates that the leaders reward their follower or punish according to the performance of those people in their employment. In this type of approach, the primary goal is to resolve on the status quo and the employees must achieve certain targets or aspiration by keeping them well informed and observed and guided by the leaders. Transactional leadership is very effective in a traditional working environment since it provides a clear rewarding performance and a clear punishment of poor performance (Antonakis and House, 2014). Nevertheless, the implementation of transactional leadership in the virtual/remote settings demands some adjustments. When working remotely or in a hybrid environment, leaders should have a strong focus on electronic tools and technologies as they cannot access and control the performance as they used to in a traditional environment. It is why the transactional leadership style can be mostly helpful in accomplishing temporary tasks and making employees achieve certain goals. Digital platforms allow e-leaders to monitor the progress, establish measurable objectives, and issue timely feedback. As an example, project management software and performance monitoring tools will enable the leaders to track the progress on the project, the productivity of the workers, and measurement of deadlines, and it is essential in the participation in the virtual workspace to stay accountable (Hannah et al., 2020).

Contingent reward is one of the major elements of transactional leadership by which leaders offer their employees rewards according to their performance. E-leadership wise, this can mean rewarding the effort and performance digitally, through electronic tools, possibly with incentives awarded and bonuses, promotions, or ceremonies during virtual get-together. E-leaders can also inspire their subordinates to accomplish performance objectives in the short-term by describing a clear relationship between rewards and performance outcomes. The possibility to make feedbacks and rewards in a real-time manner by using digital channels may assist e-leaders to keep the feeling of accountability and make sure that employees will be keen on fulfilling the requirements that the organization had set (Barybina, 2020).

Nevertheless, transactional leadership proves to be efficient at observing the performance level and achieving the targeted results, but it fails to create engagement, motivation levels, and trust in the long run. Management by exception, another aspect of transactional leadership is whereby the leaders enter into the management situation when the performance level is not achievable as per the standard. This method in remote work may create a reactive management style (instead of

proactive) when leaders intervene only when something has gone wrong instead of taking remedies in place to ensure that employees remain participative and motivated (Bednall et al., 2018).

Transactional leadership in sometimes raises a lot of concerns with the reward-punish approach because it may lead to an absence of emotional commitment and inner drive-in workers. Transactional leadership alone might not lead to levels of commitment, loyalty, or trust among members of the virtual team since in virtual teams emotional and social connections are more difficult to be designed. Workers could achieve the near-term objectives but experience failure to build up the long-term involvement that is essential to enhanced performance in the remote workplace (Mohiuddin, 2023). Due to such restrictions, transactional leadership tends to be supplemented by transformational leadership in e-leadership setting. Whereas transactional leadership is concerned with management of the tasks and monitoring of the employee performance, transformational leadership assists in inspiring, engaging, and encouraging the employees to develop trust, creativity and commitment. The synergy of the two approaches will help e-leaders deliver short-term performance of virtual teams, as well as long-term participation in them (Berkovich and Eyal, 2021). To summarize, transactional leadership becomes a useful addition to the toolbox of e-leadership, particularly when a leader needs to deal with small-time assignments and ensure accountability in the remote workplace. Nevertheless, it is less useful in promoting long-term participation and confidence in virtual teams due to the characteristics of its external rewards and reactive management. In order to curb such limitations, e-leaders are expected to combine both transactional leadership with transformational strategies to develop an all round and more effective leadership style.

2.2.3 Servant Leadership Theory

The theory of servant leadership exists, which focuses on the issue of a leader being a servant to his or her team, instead of focusing on traditional connections of power, since it is argued it is also the duty of the leader to support the employees, addressing their needs as one of the priorities (Greenleaf (1970)). The major role of the leader in this model of leadership is that the leader is at the service of his or her team by ensuring that the employees strive to work to the best of their abilities. This way of doing things is especially significant in a remote or e-leadership setting, as it places an emphasis on employee well-being and working environment and is supportive and inclusive Phipps (2019). In a virtual environment, it may be easy to feel lonely as there is no actual

interaction with other team members, hence having a servant leader is also important. Servant leadership enables the E-leaders to interact with their staff on digital mediums, listen to their issues and offer them human support and be assured that the staffs are heard and appreciated. Servant leaders are concerned with emotional needs and provide advice, counseling, and frequent feedback to meet team unity and spirits, especially when they work in remote settings as part of an organization anyway (Zentner, 2017). Empathy is a major element of servant leadership that requires the leaders to demonstrate empathy and concern about personal and professional problems of their employees. The empathic e-leaders can support more emotional and psychological needs of their staff that is crucial to sustaining engagement and motivation within a virtual environment (Benitez et al., 2022).

Listening is another essential component and in this, the e-leaders will listen to what the team members need, issues as well as recommendations. In the remote settings, where communication might not be as timely, listening is one of the most critical skills developing a sense of trust between the e-leaders and the employee and obtaining a better understanding of employee problems. Lastly, stewardship is the job of the e-leader in ensuring that the personal and professional growth of the employees is fostered (Ahmed et al., 2022). E-leaders that consider themselves stewards initiate proactive moves to enable team members get resources, opportunities and encouragements they require in order to develop and perform well in their positions (Berkovich & Eyal, 2021).

To conclude, servant leadership in e-leadership is aimed at creating a feeling of community and well-being, placing the needs of employees on the first place, and developing the supportive, empathetic, and stretch-focused virtual working environment. The leadership style can also be effectively used to minimize isolation and increase engagement in distance teams (Brown & Wyatt, 2018).

2.2.4 The Full Range Leadership Model

Full Range Leadership Model (FRLM) is the proposal of Ball (1997), which gives the integration of the transformational and transactional leadership concepts in an assembled form of leadership concept. The model acknowledges that great leadership must be flexible and the leadership must have the capability to align his or her style according to the needs of the team, task, and

environment. The e-leaders may find the combination of transformational and transactional behaviors in order to cope with the motivational side of leadership and an unquestionable necessity of the task-oriented and performance-called behavior in remote or virtual environments (Furtner, Baldegger and Rauthmann, 2013).

Under the Full Range Leadership Model in an e-leadership, there is consideration that leaders should change among transformational and transactional behaviors, according to the situation. To illustrate, a transformational leadership style can be employed when leaders want to stimulate innovation, introduce engagement, and generate a long-term vision within virtual teams. This is especially necessary in remote working scenarios where motivation and dedication may be difficult to sustain because of the fact that the workplace is physical separated (Barbuto et al., 2009). The transformational leadership can be innovative, has a clear vision and helps establish a sense of belonging and purpose that is necessary in engaging employees (Nikezic, Markovic And Bataveljic, 2013). Alternatively, transactional leadership behaviors allow the leaders to set performance expectations and track the performance and reward or correct the employees according to their performances. Transactional leadership is effective in virtual teams or where there are no clear means of supervision, otherwise employees do not move on the path towards the end and attain short-term objectives. At a distance, accountability and performance may be maintained by e-leaders through the establishment of clear expectations and providing structured feedback (“Building Relationships, Building Trust,” 2015).

There is also laissez-faire leadership that entails hands-off leadership as another part of the FRLM. Although this is a style, which is not as effective as others, it may be applied in cases when employees are highly self-incentive and able to work without person supervisions. Laissez-faire leadership can be applied in the workplace in the remote working conditions where employees can hardly need a supervisor but can need suggestions when it is required (Ryan and Tipu, 2013). Overall, the Full Range Leadership Model offers e-leaders the agility to include various leadership styles in order to address the specifications of their remote teams, and in that way reconcile motivation, performance and autonomy (Damas Dominic Suta, 2024).

2.2.5 The Role of Emotional Intelligence in E-leadership

The concept of emotional intelligence (EI) popularized by Goleman (1995) is the capability to face, comprehend, and cope with not only their own feelings but also those of other individuals. Emotional intelligence in a situation of e-leadership becomes especially significant since leaders usually lack such an opportunity as face-to-face communication to understand the moods of their subordinates. High emotional intelligence e-leaders have a better chance to handle virtual teams with little indicators of disengagement, burnout, or stress (Charkhalashvili and Kapanadze, 2023). They can nourish emotional support and thus maintain positive virtual work environment by managing conflicts, giving feedback, and encouraging open communication.

2.2.6 Key E-leadership Models

A few e-leadership models have been described so as to understand how digital leadership can be effectively adopted. A more formal insight into e-leadership can be called using the following models.

2.2.6.1 Avolio's E-leadership Model

In response the ability of leaders to lead and influence others in a virtual world, Avolio et al. (2000) have defined e-leadership as a model that would focus on the capacity of the leaders to utilize effectively the digital platform to lend authority and to influence others in a virtual environment. The model emphasizes visibility of communication, trust and feedback in e-leadership. In the model of Avolio, e-leaders are required to use ICT tools in order to share organizational vision with the rest of the team and keep everyone focused on the organizational vision by aligning team goals on it (Zhang and Bartol, 2010). They must learn to promote trust by being open, constant, and approachable, which is beneficial in the development of positive relationships with remote team members. Moreover, e-leaders are advised to give frequent feedback and appreciation so as to ensure the employees are motivated and responding to a virtual work setting (Deci et al., 2017).

2.2.6.2 The Digital Leadership Framework

The model by Westerman et al. (2014) embraces the concept of Digital Leadership Framework, which, in turn, concentrates on the adoption of digital technologies in leadership. In this framework, e-leaders are considered as key agents of digital transformation that helps organizations to adjust to the new technology. In the modern fast-changing digital environment, e-

leaders should be able to have the overall picture of the emerging technology and to guide their subordinates through the technological upheavals (Zeike et al., 2019). The framework underlines the most important skills and competencies e-leaders have to master in order to be successful in the digital-first world.

Some Major Elements in the Digital Leadership Framework are:

Digital Savviness: E-leaders also need to be well versed with new technology and its implication to both the organization and the team he or she is leading. This encompasses keeping a tab on trends related to artificial intelligence, cloud computing, big data and automation (Gledson et al., 2023). Digitally-savvy leaders are also capable of detecting their possibilities of being innovative and efficient, at the same time their organizations can fit into the competitive marketplace driven by the use of technology.

The flexibility of adaptation: E-leaders are considered as potential to be flexible and be able to change their strategies and leadership styles according to technological progress. Leaders have had to change in such a highly evolving technological world; they have to learn to change and lead their groups through the season of change (Jameson et al., 2022). This needs free thinking, and combining and adjusting plans in order to work with new tools, systems and processes as they arise.

Innovation: E-leaders are called upon to inculcate a spirit of experimentation and creativity among the subordinates. They have to make the employees think innovatively, think of the new opportunities as the matter of priority and go against everyday means of solving the problems (Kwan, 2020). Through encouraging the spirit of constant improvement and advancement, e-leaders make their teams take risks and embrace new methods of solving the issues, which is the key to organizational development and flexibility in the era of the Internet.

In short, this means that the Digital Leadership Framework explains how e-leaders need to be digitally literate, flexible and creative. Such skills play an important part towards the successful journey of handling technological disruption, whereby organisations are well built and in a progressive manner in a more digitized world (Dwivedi et al., 2021).

2.2.7 The Challenges of E-leadership

Although e-leadership has a lot of benefits with flexibility and accessibility being one of the most resonant, it has several drawbacks as well. Keeping the team engaged and motivated in the virtual environment is one of the most important issues. In absence of face to face interactions, e-leaders need to think out of the box to develop relationships, give feedback and sustain trust (Crawford-Mathis, 2009). The other challenge is the digital divide. Technology is not accessible to all the employees in equal measure and as such, this can block communication and collaboration within remote teams. The e-leaders should be familiar with these disparities and should do their best to provide all the team members with the instruments and support to be successful (Roman et al., 2018). The theories and models that were described in this section form a good basis of comprehending e-leadership. Although e-leadership is founded on the classic theories about leadership, it also involves special skills and abilities e.g. digital communication skills and emotional intelligence. E-leadership will be a dominant factor to influence workplace performance and engagement as institutions increasingly resort to remote and hybrid work processes (Efimov et al., 2020).

Table 2.1: comparison table summarizing key e-leadership models

Model/Theory	Focus	Key Components
Transformational Leadership	Inspiring and motivating employees to achieve high performance	Vision, inspiration, intellectual stimulation, and individualized consideration
Transactional Leadership	Managing performance through rewards and penalties	Contingent rewards, management by exception
Servant Leadership	Prioritizing employees' needs and well-being	Empathy, listening, stewardship
Full Range Leadership Model	Integrating both transformational and transactional styles	Transformational, transactional, laissez-faire
Avolio's E-leadership Model	Managing virtual teams using digital communication tools	Communication, trust, feedback
Digital Leadership Framework	Leading through technological disruptions	Digital savviness, adaptability, innovation

2.3 Impact of E-leadership on Employee Engagement

The most significant aspect of the engagement is employee productivity, morale, and satisfaction in general with the job, particularly in the hybrid and work-at-home scenes. Since more organizations are adapting e-leadership, it is important to know how digital leadership has influence in employee engagement to enhance organizational performance (Maheshwari et al., 2024). In this section, we will see how employee engagement can be affected by e-leadership in different ways, what major drivers of engagement in virtual teams are, and what difficulties may be connected with keeping the engagement in remote environments.

2.3.1 The Importance of Employee Engagement in the Digital Era

Employee engagement is an amount of involvement and emotional commitment that an employee has to the organization and the objectives of the organization. Not only engaged employees are more productive, they are also more likely to stay with their organization therefore cutting down turnover rates hence enhancing performance of the entire business (Kahn, 1990). The face to face communications in an in-office work culture where leaders and employees meet is one that is found to sustain relationships giving rise to the facilitation of engagement. Nevertheless, in digital or remote settings, the leaders must deploy digital means to connect with the employees and ensure the sense of belonging and dedication (Maheshwari et al., 2024). With the changing nature of business to adapt to the digital workplace, employee engagement has been made hard. Lack of physical presence and face to face communication may be isolationist and disengaging. Nevertheless, this gap can be eliminated by employing digital communication tools through which effective e-leaders would stay in touch with employees and offer feedback and a sense of belonging. Learning the potential of e-leadership to influence engagement is important to the organizations aiming to be productive and satisfy the employees even in the remote working conditions (Erhan et al., 2022).

2.3.2 How E-leadership Affects Employee Engagement

E-leadership influences some of the major ways that employees become engaged. Clarity and effectiveness of communication, motivation, as well as feedback of leaders is essential in a virtual team. The aspects described below demonstrate the way employee engagement can be impacted by e-leadership:

Transparency and Communications

Open, effective and transparent communiques are also a mainstay of e-leadership. In virtual setting, the leaders must depend on digital communications digital applications, like email, video conferencing, and messaging platforms and share expectations, brief on progress, and clarify worries. Operating a free communication channel, leaders contribute to establishing the environment of confidence and dependability. Communication, particularly when dealing with uncertainty, is to be encouraged to lessen the concerns of the employees and allow them to feel more attached to the organization. Researchers have found out that open communication boosts employee trust and involvement (Men, 2014). A way flow (leader to teams) of communications needs to be strengthened by e-leaders that involve the flow of two ways flow of communication. This creates a sense of belonging and engagement to the team members since they feel their views and worries are heard (Ghobakhloo, 2022).

Feedback and Recognition

When working in the virtual environment, employees can feel separated or rather devalued, hence recognition and feedback are essential in ensuring their engagement. Digital tools allow E-leaders to acknowledge the achievements of employees and offer positive criticism, as well as share success. There may be an absence of face-to-face communication and thus feedback that cannot be awarded in real time thus the e-leaders should be very deliberate in giving feedback by utilizing virtual communication. Namely, as Gallup (2021) discovered, workers who get frequent feedback have increased chances of being engaged in their job. E-leaders whose feedback and recognition is relevant and positive at the right time can inspire their workers, raise morals and encourage them to maintain their high level of performance.

Trust Building

Any relationship cannot stand on any other foundation other than trust and this is all the more in case of the virtual teams. Being unable to meet face to face, e-leaders should engage in trust development through their consistency, transparency, and support. Examples of trust-building behaviors, including promise keeping, honesty, and active listening, are the necessity to promote engagement (Christian, Garza and Slaughter, 2011). Trust and empowerment by E-leaders ensure that employees exercise autonomy in decision making thus contributing to a good work culture

with emphasis on accountability. Trusting in the leaders makes the employees more inclined to being engaged and psychologically ready to contribute to the objectives of the organization (Dirks & Ferrin, 2002).

Group Cohesion and Social Connectivity

Employee engagement is another factor affected by e-leadership since it enhances social connectedness in the context of virtual teams. Within a conventional workplace, unstructured social communication builds collaboration and participation in teams. Yet, the work-at-home circumstances can hardly have spontaneous conductive to remote employment, therefore, causing social isolation. This isolation can be overcome by the e-leaders, who can provide avenues of virtual socialization. Leaders can, on the example of team building, introduce planned virtual team-building activities or informal meetings, to understand each other at the personal level (Christian, Garza And Slaughter, 2011). Through social connectivity, e-leaders are able to strengthen team bonding and motivation; this eliminates the risks of burnout and disengagement.

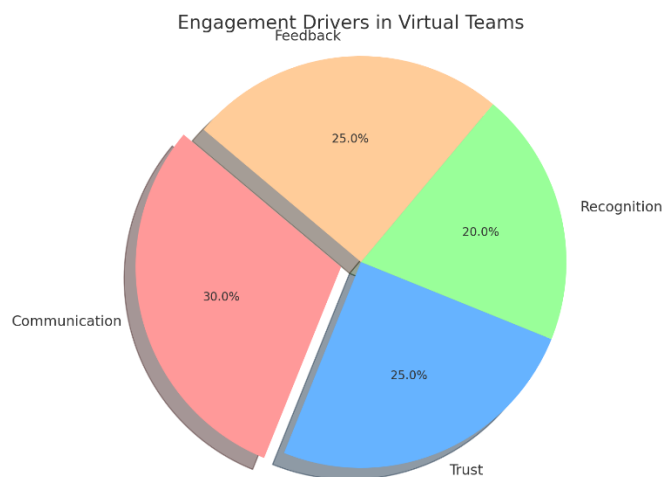


Figure 2.1: Engagement drivers

Autonomy and Empowerment

The level of autonomy and empowerment that the employees have in their work is another key element used in employee engagement. Teams that are engaged will have e-leaders who in their leadership style, allow employees to have freedom of making their own decisions, manage their own schedules and ownership of projects (Christian, Garza And Slaughter, 2011). E-leaders need to learn to trust his or her staff and not oversee everything that the staff is engaged in doing in a

remote-work set up where there is a high level of independence and flexibility often provided to employees. Independence encourages ownership and role responsibility, which are able to culminate in an increased interest (Deci & Ryan, 2000). The greater the ability of e-leaders to empower employees to take initiative, the more likely these leaders will become capable of building an engaged and motivated workforce by means of providing employees with necessary resources and support.

2.3.3 Challenges in Maintaining Employee Engagement in E-leadership

Although e-leadership has prospects of influencing employee engagement positively, a number of barriers needs to be dealt with in a bid to sustain long-term engagement in virtual team.

Digital Fatigue

Digital fatigue is one of the concerns about remote-working environments. Employees working on long sessions of video conferencing, mails, and other online communication forms are subjected to mental fatigue. This has the possibility of causing disengagement, lack of productivity as well as lower morale (Christian, Garza And Slaughter, 2011). E-leaders have to be aware of the risk of digital fatigue and act in order to counter its effects. This could involve their employees to take frequent breaks, the meetings should be fewer, and the virtual interaction should be meaningful and to the point (Shipley, 2013).

Non-verbal deficiency

During face-to-face communication, leaders are free to make use of body language, facial expressions, tone of voice as one way to determine the level of employee engagement thus make the appropriate responses to influence their leadership style. But in virtual circumstances, such hints are frequently absent, and it is more difficult to determine the emotional condition and participation rates of team members with the help of e-leaders (Christian, Garza And Slaughter, 2011). E-leaders should listen, pose open questions, and be willing to obtain feedback so that they could be sure that they are solving any problem that could appear within the team. The frequent interviews and individual meetings will allow the e-leaders to get to know more about the emotional needs of their staff members and maintain their engagement (Gledson et al., 2023).

E-leadership plays important role in engagement of employees on remote conditions of work. Employing communication, trust-building, feedback, social connectivity and empowerment, e-leaders can create an extremely engaged workforce that will continue to be productive and energized even after taking to remote working environments. Nevertheless, e-leaders should not ignore the opportunities, including the problem of digital fatigue and the absence of non-verbal communication, and act beforehand to overcome the challenges. With remote work expanding continuously, knowing how e-leadership influences employee engagement will be critical to the organizations that attempt to have a high rate of staff contentment and productivity.

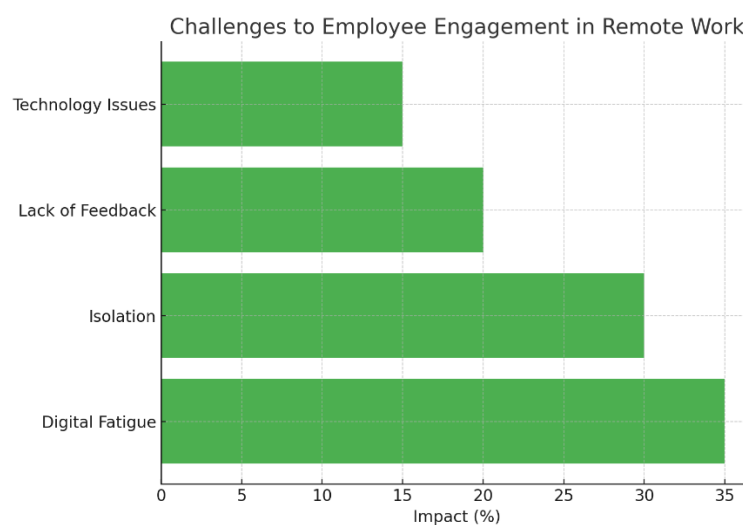


Figure 2.2: 2. Challenges to Employee Engagement in Remote Work

2.4 Digital Competencies for Effective Leadership

With organizations adopting non-face-to-face methods of operation, leadership is taking a new turn. E-leaders need to have a particular collection of digital skills that will help them handle virtual teams, interactions over digital platforms, and knowledge of navigating the intrigues of the digital workplace. In this part, we shall discuss the digital skills that are necessary in effective e-leadership, how these skills can make a leader successful and finally on the role of constant learning in the digital era.

2.4.1 Definition of Digital Competencies for E-leadership

Digital competencies are the skills and knowledge requirements in the implementation and utilization of digital technologies to carry out activities and communicate. E-leaders have advanced expertise of digital skills over the standard technical skills, including the usage of digital devices with the purpose to communicate, collaborate, analyze information and make decisions. The digital competencies are necessary to make sure that the e-leaders will be able to make their way through the intricacies of remote working, guide their teams, and promote the organizational prosperity. The main digital skills of e-leaders are a skill base in digital communication tools, data literacy, knowledge about security in the digital world, and an ability to use technology to make a decision and solve the problem. These skills will help the leaders to manage and deal effectively with the virtual teams, promote the collaboration, and make employees perform their work properly within the digital world (Skrabut, 2014).

2.4.2 Key Digital Competencies for E-leaders

Digital Communication Skills

The key of e-leadership is a digital communication. E-leaders will have to possess communication skills with the use of digitalized platforms, i.e., video conferencing, emails, instant messaging, and collaboration tools. The virtual environment needs not only technically skilled people but also emotionally intelligent people to communicate within a virtual environment, and the dimension of emotion and flexibility in communicating with varying contexts and audiences (Barybina, 2020). The leaders need to be skilled in using such video communication platforms as Zoom, Microsoft Teams, or Google Meet to hold meetings, webinars, and one-on-one calls. They should also be able to make use of the tools of written communication, e.g. email and instant messaging to keep employees updated, give them feedback, and acknowledge them (Gupta & Agarwal, 2025).

Data Literacy

With so many organizations using digital tools to compile and interpret data, e-leaders have to be data-literate. Data literacy is the competence of interpreting, acquiring and building upon the data in order to make informed decisions. The use of data promotes effectiveness by enabling e-leaders who have high levels of data literacy skills to monitor business outputs, progress, and advancements and detect improvement by tracking what the team is supposed to accomplish (Usova and Laws, 2021).

To take an example, they might monitor core performance metrics (KPIs), and establish the efficiency of digital communication plans by means of data analytics instruments, which are accessible to e-leaders. E-leaders can use such information provided in the data regarding employee engagement, productivity, and satisfaction to make data-driven decisions and increase the team performance and engagement (Zeike et al., 2019).

Cyber security awareness

With heightened remote work, there is enhanced concern when it comes to cybersecurity. E-leaders should be conversant with best practices in cybersecurity and ensure that the security strategies are followed by the teams so that the sensitive data can be secured and healthy cyber environment is maintained too. These comprise adoption of safe channels of communication, protection of passwords and imparting education to the employees regarding the dangers of cyber threats (Tasevski, 2016). E-leaders should also be kept abreast of the new trends of cyber security and collaborate with IT departments to enforce security practices including two-factor verification, encryption and file-sharing systems.

Technological Adaptability - Innovation

The term technological adaptability can be defined as the right to promptly respond to new digital tools and technologies. E-leaders are also required to keep the course of the latest technological innovations and be ready to experiment with the new tools which can positively affect team performance, collaboration and communication. Besides being adaptable, the e-leaders should create the culture of innovation within their team (Xiao and North, 2017). Due to their ability to promote new technologies and creative approaches to solving problems, e-leaders can lead to the continuous improvement process and stay competitive in the digital era.

The Role of Continuous Learning in E-leadership

Since digital competences in technology are constantly changing, e-leaders should not stop learning to refresh their digital competences. All of this involves lifelong learning, or the idea of keeping up with the latest trends, changes to take on new tools and to perfect leadership skills one might have. Learning-oriented e-leaders can keep up with the changes in the digital environment and make the teams continue working and performing (Jameson et al., 2022).

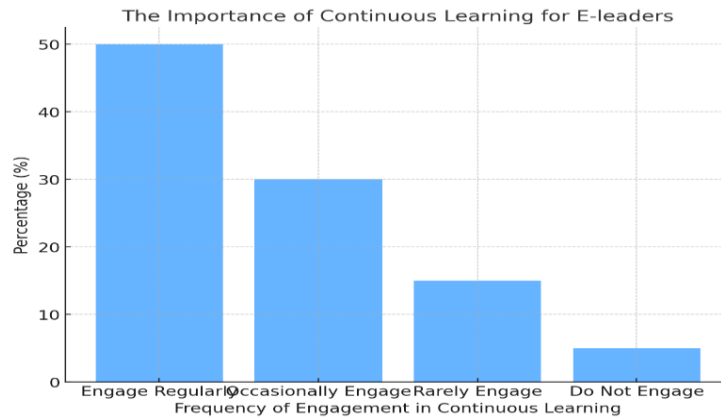


Figure 2.3: Importance of continuous learning

E-leaders have access to lifelong learning via online courses, webinars, conferences in the field, and interaction with colleagues in the profession. Another way one can empower their teams is to promote their digital skills, making it a learning and innovative culture. E-leadership requires effective digital competencies. To lead virtual teams and adapt to the pitfalls and complications of remote working, e-leaders should have a variety of skills, including digital communication, data literacy and cybersecurity understanding (Jameson et al., 2022). The ever-changing digital environment requires e-leaders to participate in a lifelong learning process in order to closely track any new tools and technologies. Through these competencies, e-leaders would improve the level of their leadership, engagement of their teams, and ensure the success of their organizations in the digital world (Hannah et al., 2020).



Figure 2.4: 1. Digital Competencies for E-leadership

2.4 Challenges in E-leadership and Remote Work

This transition to a remote/hybrid working model has transformed the nature of interaction leaders can have with their teams, both in terms of unparalleled possibilities as well as challenging technicalities. Although e-leadership may bring more flexibility and digital connectivity, it also presents various challenges that may affect the performance of the leadership, teams and the well-being of employees (Vander, 2024). In this part, the researcher provides an overview of the major issues that e-leaders encounter in ensuring that their virtual teams are functional and productive in the digital environment.

2.4.3 Communication Barriers

Effective communication is a basic challenge of e-leadership. When one is in a distant environment, face-to-face communication is not possible and hence, the delivery of non-verbal communication like the tone, body language and facial expressions is restricted because it cannot be used to send messages on empathy, enthusiasm, and intent. This lack usually results in misunderstanding, misinterpretation, and loss of message clarity (Ahmad, 2025). In addition, there is the possibility of asynchronous types of communication creating lags in feedback, which might cause frustration among employees and make it difficult to make fast decisions. Global teams also face challenges because of time zone issues that also hinder real-time collaboration (Huang & Rust, 2018).

Table 2.2: traditional vs. digital communication effectiveness

Communication Method	Effectiveness in Traditional Settings	Effectiveness in Digital Settings
Face-to-Face	High	Low
Video Conferencing	Medium	High
Email	Medium	Medium
Chat Platforms	Low	High

2.4.4 Technological Limitations and Accessibility

E-leadership progress can directly be associated with the presence of digital infrastructures within the reach of leaders and the workforce. All team members do not have equal access to fast internet, safe networks, or modernized digital gadgets. Such digital divide may cause unequal performance and participation particularly in organizations which are located in the developing region or have distributed teams (Gupta and Agarwal, 2025). Also, many digital tools are being offered on the market, and each of them has certain features that might create confusion and inefficiencies. Such simple operations as opening schedules, files or video conferencing may prove cumbersome without adequate training.

2.4.5 trust construction and maintenance

Actually, in virtual environments spontaneous interactions and informal conversations are few and far between, so in that case trust will be a deliberate and consistent process to achieve. The e-leaders have to embrace a feeling of psychological security and honesty, however, when communicating and acting remotely, they have to be mindful and often repetitive in actions. Workers might have difficulties feeling noticed or listened to and it might cause a loss of trust in a long-term perspective (Ghobakhloo, 2022). Little trust affects collaboration, transparency, and engagement in a negative way. Workers who feel excluded by the leadership in a remote context are more inclined to do a poor job, detach themselves, and quit the company.

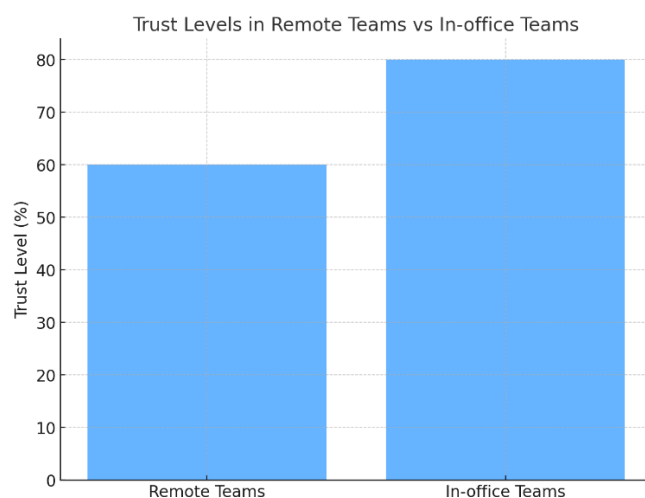


Figure 2.5: Comparison of trust level in Remote teams Vs in office teams

2.4.6 Monitoring Performance Without Micromanagement

The next dilemma, e-leaders consistently face, is the balancing between accountability and autonomy. Leaders are usually concerned about the absence of transparency in everyday operations of the employees, and this makes it very easy to micromanage (Jameson et al., 2022). Not too much surveillance though (e.g. activity tracking software or being over-check-in-conscious), morale and/or trust can be lost. The solution to this is that e-leaders should establish specific performance targets, outputs, and timelines, with sensitivity to employee independence, and inability to develop accountability. It is necessary to implement a results-based approach instead of paying attention to activity (Mishra, Rajkumar and Mishra, 2025).

2.4.7 Employee Isolation and Mental Health

Telecommuting may also enhance isolation and loneliness, especially to the employees who need people to deal with to feel good. Losing touch with their informal meetings (coffee break, chats in the hall, or in the offices) may decrease team esprit, and interpersonal relationships (moore, Sutton and Maybery, 2010). This lack of emotional connection is usually turned into lower interaction, creativity as well as mental health. Social interaction and supporting people with their mental health are two areas where e-leaders need to go the extra mile and become proactive, which might not be in their area of expertise.

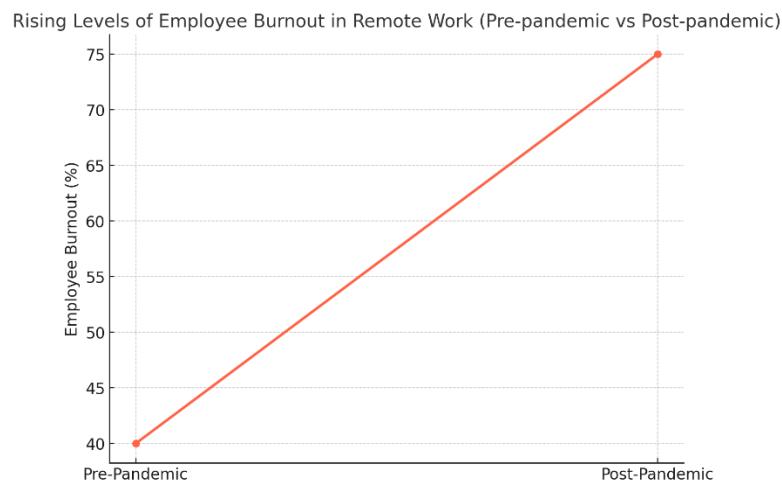


Figure 2.6: Rising Levels Of Employee Burnout In Remote Work

2.4.8 Adapting Leadership Styles

Not every style of leadership is used appropriately in a virtual environment. To give an example, autocratic leadership can make remote groups feel alienated, whereas transformational or servant leadership can be more appropriate to encourage motivation and teamwork. In the remote-first world, leaders have to find ways to change their own style, using emotional intelligence and digital fluency in their efforts. Also, a large number of leaders rise to this position through his/her technical abilities but not his/her people skills. Communication, empathy, or adaptability that can be classified as soft skills are even more crucial in digital workplaces (Journal of Cybersecurity and Privacy Editorial Office, 2023).

2.4.9 Cybersecurity and Information Privacy

E-leadership presupposes the continuous application of digital communication and cloud-based environments, which creates issues regarding data security and protection. The leaders should be cautious regarding cyber threats, phishing, and the breach of data, but they should also make sure that their workers maintain the best practices (Journal of Cybersecurity and Privacy Editorial Office, 2023). The inability to protect virtual working areas may lead to serious legal and reputation-related forms of risks. It is therefore a necessity that e-leaders collaborate with IT departments and entrench security practices in their day to day activities.

2.4.10 Organizational Resistance to Change

Finally, there are organizations that are not culturally quick in using e-leadership practices because of cultural inertia or fear of losing control. Structures of old hierarchies and decision-making (which were centralized) may kill the nimbleness needed to succeed in e-leadership. Changing inside is vital in the process of implementing digital transformation since leaders might encounter resistance internally that requires change management expertise skills. E-leadership challenges are many sided and they touch on technological, psychological, organizational and interpersonal realities (Park, 2013). Effective e-leaders should know how to overcome these obstacles through both technical proficiency and emotional intelligence and flexibility. It is through a recognition and inclusion of these barriers that organizations are able to enjoy the fruits of e-leadership in remote and hybrid settings (Karakose et al., 2022).

2.5 Gaps in Literature and Future Research Directions

Although e-leadership becomes an increasingly popular topic as a result of remote work and digital transformation, academic literature in the relevant field is relatively new. In this section, the critical gaps within the present research findings are established, and a set of opportunities in which the future studies can evolve to fit the dynamic environment related to digital leadership is proposed.

2.5.1 Limited Empirical Data on Long-term Effects

Until the COVID-19 pandemic, most of the e-leadership studies have been taking place in reaction to the circumstances. Consequently, there is a lot of reactive and exploratory literature that is of recent origin. These studies do give good insights; however, they are not usually longitudinal based, thus making it hard to evaluate the potential impact of e-leadership on organization culture, employee behavior and outcome of performance (Notman, 2020). Research direction, Use longitudinal designs that follow the results of leadership several years after the initial time in the remote and hybrid work models.

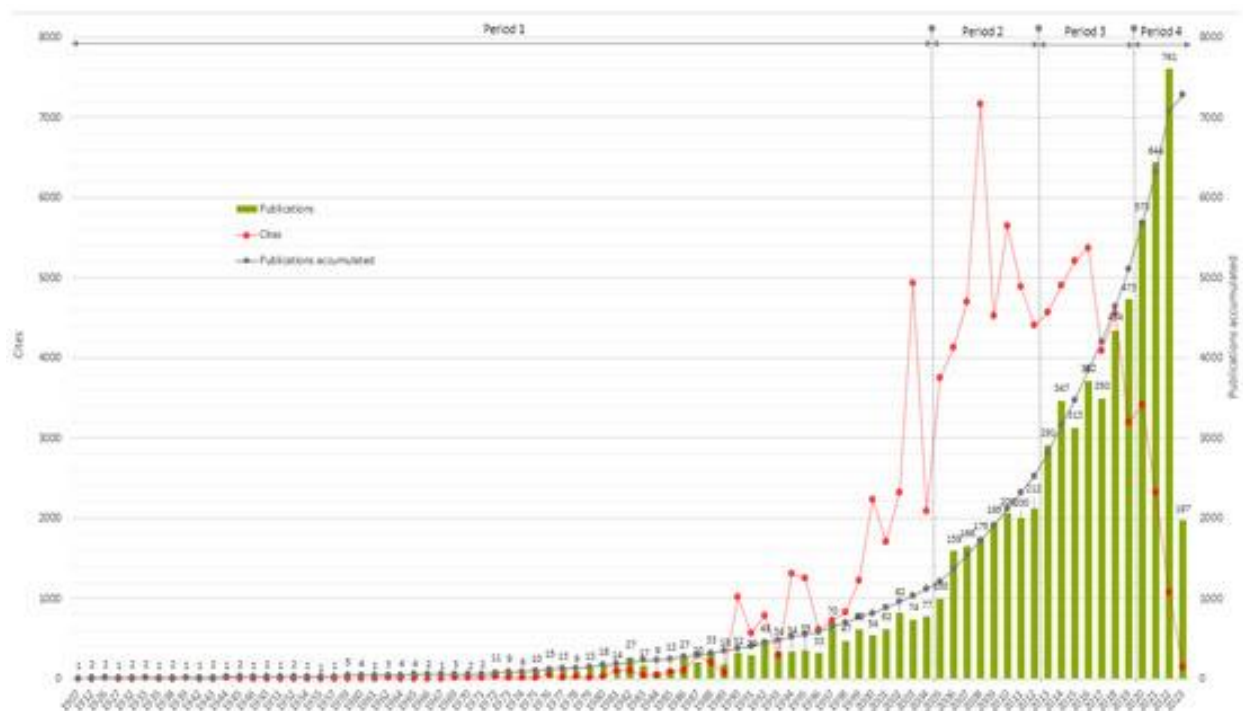


Figure 2.7: Evolution of Educational Leadership

2.5.2 Inconsistent Conceptualization of E-leadership

E-leadership has no standard definition or definition type. The various studies have different definitions and that brings about inconsistencies and it reduces the generalizability of the study. It is also hard to compare research findings in the different industries or cultural settings due to this conceptual ambiguity (Krisharyuli, Himam and Ramdani, 2020). Research Directions in the Future, establish model and measurement instruments of the standardization of the e-leadership which considers industry-specific and culture-related peculiarities.

2.5.3 Underrepresentation of Diverse Leadership Styles

The focal point of most of the research is about transformational and transactional two types of leadership style within a virtual setting. The other forms, i.e. servant leadership, democratic leadership, or authentic leadership are understored when related to remote working. These alternative views can teach valuable lessons of what leaders can work on to bring about inclusion, well-being and innovation (Krisharyuli, Himam and Ramdani, 2020). Future research direction, Investigate the efficiency of not yet studied type of leadership in the context of working in a digital and multicultural environment.

2.5.4 Apathetic Industry Targeted Applications

E-leadership problems and strategies can vary significantly, with the implication depending on healthcare, educational, information technology, and manufacturing sectors. However, works on the issues related to the matter are well known, yet their results adopt a blanket-like character, which does not consider areas-specific aspects, including regulatory compliance standards, business design, and workforce trends (Li et al., 2016). Future Research Direction, conduct case studies which are specific to each industry reporting approaches in the implementation and modification of the e-leadership practices.

2.5.5 Geographical and Cultural Bias

The most apparent empirical study on e-leadership is in the Western World in particular United States and in Europe. This will enable the geographical and cultural bias to sneak in thereby influencing the universality in other areas such as in Asia, Africa and Latin America (Maheshwari et al., 2024). Future Research Direction, recommend cross-cultural comparisons to be carried out

so as to establish how e-leadership is embraced in other parts of the world and its usage (Yee, 2006).

2.5.6 Inadequate Integration of Technology Trends

Such new technologies as AI, virtual reality (VR), blockchain will remake digital communication and teleworking. Nevertheless, there is little literature exhibited on how these technologies are going to modify leadership practice and decision making within virtual worlds (Maheshwari et al., 2024). Research Direction in Future, Deepen the application of AI-based tools in the context of e-leadership in making managerial decisions, monitoring employees, and their performance.

Explore the effects of VR/AR settings on the communications and team-building in leadership.

2.5.7 Remote Leadership Psychological and Emotional factors

The psychological burden of remote management such as stress, burnout, and digital fatigue have been largely recognized but under-researched to a greater extent. E-leaders also suffer isolation and pressure to make a lot of things without being supported.

Prospective Research Movement, Research the affective states of e-leaders and create resiliency and mental health frameworks online (Yee, 2006).

Although e-leadership has become one of the significant fields of study related to digital transformation and remote work, this domain remains at the developmental stage. The solutions to the identified gaps in this section (i.e., minimal response on longitudinal data, cultural diversity, and sector-specific implementation) will help obtain a more comprehensive and in-depth picture of digital leadership. Research in the future should be dynamic, multidisciplinary, and participatory in order to stay abreast with the fast developments in technologies and working conditions.

3 Chapter 3: Research Methodology

The chapter provides an elaborate presentation of the research method followed in this research that illustrates the research design, data collection mode, sampling plan, data analysis mode, ethical aspect and limitations. The methodology presents the methods through which the information will be gathered and analyzed, and interpreted, and explains why qualitative research techniques are appropriate in studying the extent to which e-leadership influences job performance and employee engagement in remote working (Kim & Ferguson, 2018).

3.1 Research Design

The research design is a plan or a plan of how to conduct the study and how the data that will be collected is going to be investigated. This research takes a qualitative research design because it is highly appropriate in investigating and understanding complexities and intricacy of human behavior, attitude and experience in the study of e-leadership (Kwan, 2020). Qualitative research enables a better comprehension in the context of e-leadership practices in employee engagement and performance in a virtual environment providing an overseer of the entire global profile of leadership in remote work.

3.1.1 Justification of Qualitative Research

The study will use qualitative research due to various reasons. First, it gives one the advantage of exploring lived experiences and perceptions of e-leadership in more detail about the participants. Through qualitative approach, the study will be able to mop the subjective nature of the e-leadership practices which could not be easily quantified using questionnaires or other numbers. Additionally, qualitative study can help to get a fresh understanding of a rather unexplored phenomenon, which comprises the correlation between e-leadership and employee engagement in remote teams (Luthans and Youssef-Morgan, 2017). Moreover, qualitative research is very flexible and adaptive, and it is allowed to raise new themes and issues throughout the process of the research. This flexibility is important in data capturing, since e-leadership is a very dynamic field.

3.1.2 Research Methodology: Case study

This study utilizes the use of a case study research design because it is a typical method in qualitative research that involves giving a comprehensive explanation of a certain phenomenon in its real-life setting (Yin, 2009). Case study is an appropriate method to examine the effect of e-leadership within the particular context of an organization, and it will be possible to learn in detail about the challenges, tactics, and final results of remote leadership (Li et al., 2016). The research will be conducted using the case study methodology since this method allows one to study the most effective experiences in implementing the remote work policy and the role of e-leadership practices in these successful organizations regarding the role of these practices in employee engagement and performance. The rich, contextual data that is necessary in grasping the intricacies of e-leadership is also possible through the case study method cited by the researcher.

3.1.3 Research Questions

Research questions that motivate the research design are as follows:

1. Which are the necessary competencies of successful e-leadership in virtual workplaces?
2. What is the role of e-leadership on engagement and motivation of workers in virtual workspaces?
3. How does the usage of digital tools in communications contribute to better leadership and efficiency in teamwork?
4. What are some of the challenges experienced by e-leaders when they are handling remote teams and which are their solutions to them?
5. What can companies do to enhance their e-leadership strategies so that their performance in the workplace and the health of their employees remain in a long-term course?

The research design is designed in such a way that these questions are answered qualitatively by employing interviews and case studies to bring out deep data about e-leaders and workers in remote workplaces.

3.2 Data Collection Methods

Data collection process is very important part of the research methodology since it decides how the relevant and accurate data is to be collected in the research to be able to answer the research

questions. In this research, there are several qualitative qualification measures to be followed in order to get profound information on e-leadership practices.

3.2.1 Semi-Structured interviews

Data collection will be carried out mainly through the use of semi-structured interviews. Semi-structured interviews are common in the study of qualitative research since they give room to the flexibility of the questioning, but the answers of the interviewee always have to relate to the research topic (Chevalier, 2014). The semi-structured format enables the combination of both flexibility of inquiry and comparability of answers between interviews so that both the study questions are answered and the participants are free to talk about their experiences and see the reality they live in. The interviews will involve e-leaders (managers, team leaders and senior executives) and employees that have experience working either in remote or in hybrid setting. Among the questions that will be addressed in the interviews, e-leadership competencies, communication practices, obstacles that remote teams encounter and how e-leaders use to keep employees engaged as well as performing shall be discussed (Luthans & Youssef-Morgan, 2017).

Table 3: Sample interview questions for e-leaders and employees

E-leader Interview Questions	Employee Interview Questions
How do you maintain team engagement?	How do you feel about your leader's approach?
What digital tools do you use for communication?	How effective do you think your leader's communication is?
What challenges have you faced in managing a remote team?	What challenges do you face in remote work?
How do you build trust with your team remotely?	How would you rate the trust in your virtual team?
How do you adapt your leadership style to meet the diverse needs of remote team members?	In what ways does your leader adapt their approach to support you in a remote environment?

3.2.2 Focus Groups

Focus groups of small numbers of employees within different teams within an organization will be also used in addition to that of the semi-structured interviews. In the focus groups, group interaction is possible, one which can in turn formulate new ideas and insights in terms of exchange of opinions (Wu et al., 2015). They are especially effective when analyzing the collective perception of the employees on the practice of e-leadership and effects of leadership on team dynamics. The perspectives regarding the collaboration in the team, the communication of the leaders, and the successfulness of the digital tools to provide people with support in the remote work will be collected with the help of focus groups (Maheshwari et al., 2024). The talks will be facilitated with a facilitator backing but they will be expected to give their ideas and talk to each other.

3.2.3 Document Analysis

Secondary data collection methods will also be done through document analysis. Such a strategy presupposes going through organizational literature, e.g., leadership training documents, the rules of communication, and telecommuting policies. These pieces of knowledge give us an understanding of the formalized ways and means that the organizational employ to carry out the practice of e-leadership.

3.3 Sampling Strategy

The sampling plan explains the process of selecting the participants of the study. To identify the participants with the appropriate experience and expertise in the field of e-leadership, a purposive sampling approach is going to be employed. Purposive sampling is important because it enables the researcher to specifically resort to people the most likely to be able to give useful answers to the research questions (Mishra et al., 2025).

3.3.1 E-leader based-selection

The e-leaders will be chosen depending on their experiences in dealing with remote or hybrid teams. The sampling will entail managers, team leaders and even senior managers who have been in the forefront of leading and managing virtual teams (Maheshwari et al., 2024). Some of the considerations that will be made in the process of selection are:

- One year experience of working with remote teams.

- Digital tools to use in communication and collaboration within the staff.
- Capability of laying clues on e-leadership practices and issues.

3.3.2 Staff Choice

They are going to recruit employees that belong to organizations that have employed remote or hybrid work models. Their sample is going to consist of respondents with experience of working under e-leaders in different industries and occupations. Such selection criteria will be:

- History in working remotely or in the hybrid environment.
- Engagement in virtual team projects or activity.
- Desire to exchange their ideas about e-leadership and engagement.

3.3.3 Sample Size

The research sample will contain 50-70 e-leaders and 100-120 employees of various companies. Its size is large enough to allow data saturation, that is, there will be no emergence of new themes and knowledge once more participants are added to the sample.

3.4 Data Analysis Techniques

Thematic analysis will be employed in the analysis of data which will be obtained using semi-structured interviews, focus groups and document analysis because it is a very common method in qualitative research. Thematic analysis will enable the identification of patterns and themes in the data, which gives an in-depth insight into the research topic.

3.4.1 Thematic Analysis

Patterns (themes) which are within the data, will be identified, analyzed and reported utilizing thematic analysis (Springer and Harwood, 2014). The examination will be done as given below:

1. Getting acquainted with Data: Transcription of interviews and focus group discourses and reading the data numerous times.
2. Initial Coding: Steps involved in giving language/number codes to pieces of recorded data that give significance to the inquiry of the research.

3. Searching Themes: Placing similar codes together in themes which represent the key points that members are talking about.
4. Reviewing Themes: A review of the themes in order to make sure that they are a proper representation of the information.
5. Defining and Naming of Themes: Defining of each theme and its applicability towards the research questions.
6. Writing the Report: The report should include the results, accompanied by specific description of every theme and direct quotations of participants.

The software in use to help in the data analysis process will be NVivo. NVivo: a qualitative data analysis program which enables researchers to organize and find through the textual data. The transcripts and focus group discussions of the interviews will be organized and coded using the software that will help find the themes and patterns.

3.5 Ethical Considerations

Ethics plays a very important role in conducting qualitative research, especially when the researcher is handling sensitive information about the participants. The subsequent ethics will be observed in the course of the research: The participants will be told about the purpose of the study, the data collection procedure, and their rights as the participant (Assessment of Workplace Hazard and Safety Performance of the Construction Industry, 2021). All the participants will be informed, and a signed agreement will be signed prior to the start of data collection. The identity of the participants and personal information will be confidential. Those data will be anonymized to make sure that the privacy is not targeted. There will be no compulsion when it comes to participation in the study and the participants are at liberty to stop at any time with no penalty. An institutional ethics review board will be submitted to the study so as to ascertain all the ethical standards given are adhered to (Mohiuddin, 2023).

3.6 Study Limitations

Although the study is aimed at delivering significant information about e-leadership, it is necessary to be informed about several limitations. The study examines a particular group of e-leaders and remote workers to reduce generalizability of the results to industries and regions. Since the data will be gathered using interviews and focus groups, it is possible to create self-report bias, in which

the participants give responses that are pleasing to listeners instead of being their own occurrences. Bureaucracy will study a limited amount of time as it will hinder study of different organizational and individuals. This chapter gives details to the methodology employed in the study where the researcher describes it as qualitative in nature and ensures the transformation of employee engagement and performance through e-leadership. The research questions can be well studied with the help of the research design, data collection techniques, samplings and data analysis procedures. The implications of the study in terms of morality and constraints provide a clear point on the need to uphold the integrity of the research and to respond to the challenges (Notman, 2020).

4 Chapter 4: Findings and Discussion

This chapter will summarize the results obtained in the collected data, after interviews, case studies and other primary sources used. The findings are discussed under key findings according to the themes having emerged through qualitative data. After the presentation of the findings, these results will be discussed in the mirror of the literature on e-leadership, virtual work, and employee engagement.

4.1 The findings of the Key Results

In this section, a set of findings of the semi-structured interviews, the focus groups, and the documents study will be presented in general. The results are divided into the following themes: communication, trust, feedback, employee engagement, challenges encountered by e-leaders, and the function of digital tools in the effective e-leadership.

4.1.1 Communication Strategies

Some of the key findings were related to the theme of communication. E-leaders advocated the need to use clear, consistent and transparent communication to ensure a remote work environment did not impact negatively on team engagement and performance. The main issues connected to the communication strategies are given below:

Frequency and Types of Communication: E-leaders of the study mentioned that regular communication was vital to both team cohesiveness and performance. Another application of video conferencing tools (e.g., zoom, Microsoft Teams) was adopted by many e-leaders to have a check-in with the team daily or weekly. They used immediate messaging services (e.g., Slack, Microsoft teams chat) as well, to exchange timely events and informal information as well. More detailed sharing of information was also carried out using asynchronous communication like through email.

Transparency and Insights: E-leaders pointed out that it was necessary to give clear instructions and updates in a virtual setting since misdirection was a possibility. They also elucidated the significance to be clear on the goals, expectations, and challenges of the company so that a coordination could be present across the team.

Communication Feedback by Employees: The employees indicated that the frequency rate and clarity of communication had a significant influence in relation to their engagement levels. Workers who communicated more to their superiors in even simple check-ins were more attached and inspired. Nevertheless, other participants said that digital communications had a tendency to be quite overwhelming, especially in cases where they received too many emails or were invited to meetings unnecessarily (Oh & Chua, 2018).

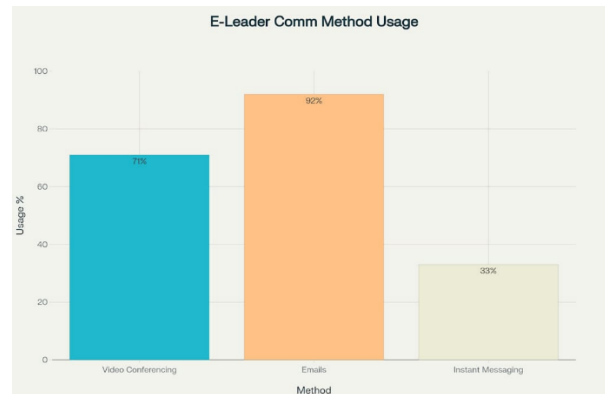


Figure 8: frequency of communication methods

4.1.2 Trust and relationships building

Other key findings were the capability of e-leaders to establish and sustain trust in remote teams. Effective leadership presupposes trust as its key issue, and this value was highlighted by both e-leaders and workers.

Trust- building Practices: E- leadership used a number of strategies to gain trust long-distance. Some of these were high transparency in decision-making, being vulnerable, consistency in their behavior, and communication. Numerous e-leaders reported empathy and inclination to support people, particularly during hard moments (e.g., throughout the pandemic), to be building blocks of trust.

Trust in Leaders: According to employee perceptions of trust, employees who believed that their leaders trusted them and trusted their skills mentioned high levels of engagement and motivation. On the other hand, the employees who were treated as micromanaged ones or those employees who were not being involved in the decision-making processes felt frustrated and disappointing (Building Relationships, Building Trust, 2015).

Table 4: trust-building practices

Trust-Building Practice	Description	Example Actions
Transparency	Openly share information, decisions, and challenges to foster credibility and reliability.	Communicate goals and updates, admit mistakes, provide context for decisions.
Empathy	Show understanding and care for team members' perspectives and challenges.	Actively listen, acknowledge concerns, create psychological safety, offer support.
Consistency	Maintain regular, predictable communication and follow through on commitments.	Stick to meeting routines, deliver on promises, set clear expectations.
Feedback	Encourage and act upon input from team members to promote openness and improvement.	Solicit feedback, host Q&A sessions, use surveys, recognize contributions.

4.1.3 Feedback and Recognition

Trust and relationships building

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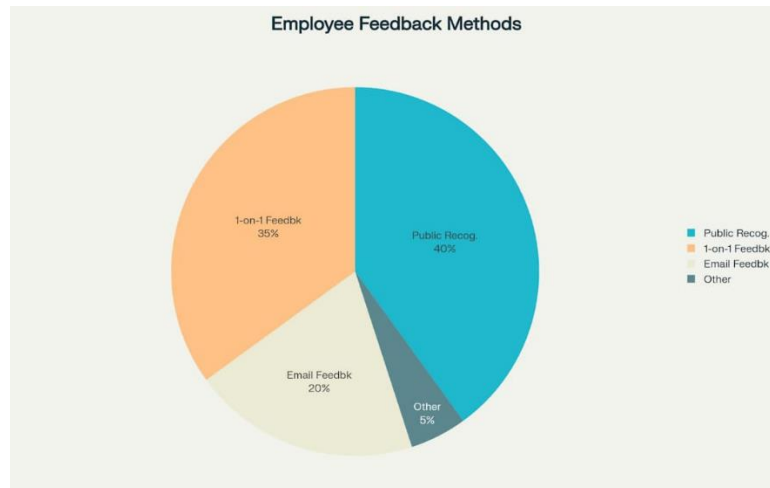


Figure 9: Employee feedback methods

4.1.4 Employee Engagement in Remote Work

The other important theme concerned employee engagement in distant locations. The results imply that communication, trust, and a feeling of belonging to a team are key concepts whose degree of development by the e-leaders may determine a significant commitment.

Social Connectivity: E-leaders that managed to arrange the virtual meetings of a mixed nature like the informal coffee break or the virtual happy hours were more effective in producing the feeling of connection among the team members. These social interactions though informal made the employees more engaged and less isolated.

Participation of the Employees in Team Activities: Employees admitted that they were more engaged when they felt part of the team activities and decisions. E-leaders who urged employees to attend the brainstorming sessions and tested the ideas of employees in vital affairs were capable of developing an engaged workforce.

Issues regarding Remote Engagement: Some of the employees have reported that although their e-leaders do everything they can to ensure that they still remain engaged, they nevertheless felt isolated (Harter, Schmidt and Hayes, 2002). Such employees believed that socialization levels would decline and the sense of belonging would decrease as a result of the absence of face-to-face communication with colleagues.

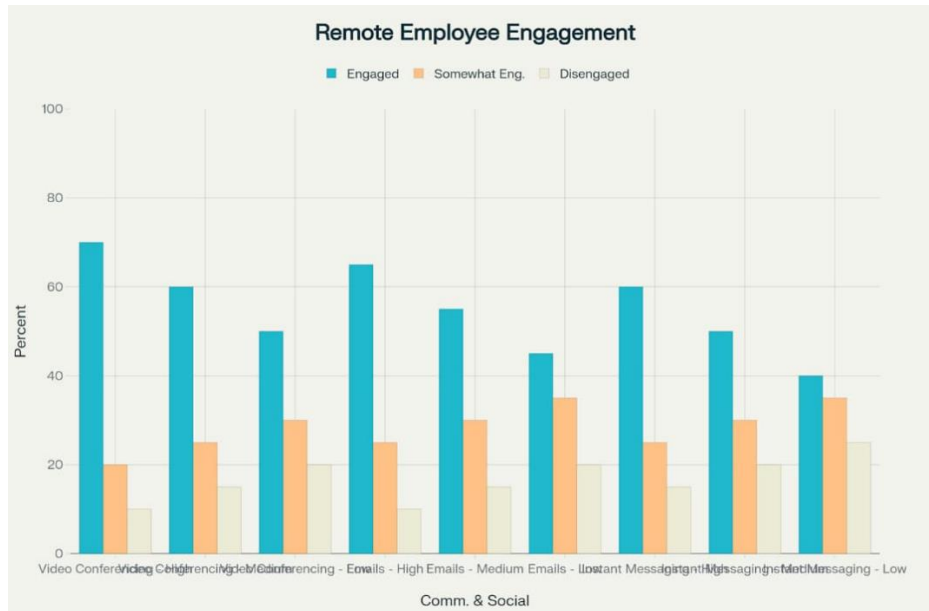


Figure 10: Remote Employee Engagement

4.1.5 Challenges Faced by E-leaders

E-leaders expressed a number of difficulties in dealing with remote teams. Such pressures included communication and monitoring of performance and team morale.

Performance Monitoring: E-leaders noted that it was difficult to measure the team performance at a distance. Although the digital tools enabled them to manage the completion and productivity of tasks, they thought that the tools did not completely measure the employee engagement or the quality of work. This raised the issue on the impact on ensuring that the employees are really interested in their work, and not doing the job (Phipps, 2019).

Employee Well-being: E-leaders were also confronted with the problem of employee well being in an online environment. Mental health of employees was also a concern to many e-leaders particularly in the COVID-19 pandemic times. Even though they tried to be supportive, some e-leaders admitted that they were ill-prepared to attend to the emotional needs of their teams (Roman et al., 2018).

Technological Barriers: Others of such e-leaders stated that they experienced difficulties in the digital tools used in communication and collaboration. Those were things like bad internet connection, software bugs, and the impossibility to combine different platforms into one working process.

4.1.6 The Digital Tool in E- leadership

The essential element of e-leadership was digital instruments. These results indicate that skilled e-leaders could handle their teams in a better way and guarantee proper communication because of their skills of working with digital tools.

Communication and Collaboration tools: E-leaders applied various communication and collaboration tools, i.e., video conferencing (Zooms, etc.), messaging (Slack, etc.), and project management (Trello, Asana, etc.). The choice of the tools was dependent on the needs of the team and the character of work (Selvi & Aiswarya, 2022).

Digital Tool Challenges: Many people are using digital tools, but some e-leaders asserted that their workers had difficulty with digital tool overload. Lots of workers complained about the necessity to cope with various sources of communication, managing the project, and sharing the documents.

4.2 Analysis of Findings

The discussion of the main findings makes correlations between the findings and current literature on e-leadership, virtual job, and involvement. It is due to the reference to the results in the light of the theoretical frameworks reviewed in Chapter 2 that we can better grasp what factors contribute to the effectiveness of e-leadership and how it can increase employee engagement and performance.

4.2.1 Communication and transparency

The value of communication in remote environments is in line with the existing literature that confirms communication as an important value to e-leaders. According to Avolio and his fellow researchers, e-leadership involves a proper aspect of communication that facilitates transparency, trust, and team cohesions (Avolio et al., 2000). The results of this study support this notion, as they demonstrate that e-leaders who give more emphasis on a clear and consistent communication fare better when it comes to ensuring high level of engagement within the organization.

The available options concerning synchronous and asynchronous approaches, which are used, also correspond with Men (2014), who emphasized that communication style must be flexible enough to meet the requests of distant teams. Knowing that digital channels allow building the bridge

between face-to-face and remote communication, e-leaders can combine the possibilities of different media sources to distribute the message to their teams and help them continuously learn and stay in touch (Tasevski, 2016).

4.2.2 Trust and Relationship Building

The significance of trust in e-leadership has been effectively covered by the literatures. Dirks and Ferrin (2002) argued that proper leadership in virtual teams relies on the role of trust in encouraging teamwork, openness, and participation. This argument can be evidenced by the results of this research, which indicate that e-leaders found successful in the process of managing employee engagement and team cohesion are those who engaged in practices, which facilitate trust building, including transparency, empathy, and consistency (“The Moderating Role of Workplace Social Support in the Relationship between Workplace Bullying and Job Performance,” 2023).

Nonetheless, issues of trust formation in remote settings established in this paper coincide with the questions by Bartsch et al. (2021). Leaders leading remote environment have to be deliberate in establishing trust because they cannot get the sense of certain emotions and understand the dynamics of the team because it is harder to do in a remote setting. The results indicate an idea that the transparent types of e-leaders that can express an empathetic attitude to the members of the team have better chances to become successful in trust and engagement building.

4.2.3 Feedback and Recognition

As Gallup (2021) states, feedback and recognition are the keys to employee engagement. The outcomes of the research indicate that e-leaders and employees are both aware of the significance of feedback in keeping employees engaged. E-leaders who give timely yet constructive feedback will increase the levels of employee satisfaction and motivation. This conclusion aligns with those of Deci and Ryan (2000), who claim that to engage remote teams, recognition and positive feedback are fundamental. Furthermore, the focus on digital tools to provide feedback is in line with the conclusion of Purvanova and Kenda (2021), as they note that the practices of providing feedback should be adapted by e-leaders to the digital environments. Q: The skill to give feedback in a variety of ways, whether on a video call or instant messaging, is to make the employees feel important and related to their leaders. The section contained the most important findings of the research, which analyzed the role of communication, trust-building, feedback, employee

engagement, and challenges, along with digital tools in e-leadership. As indicated by the findings, effective communication, trust, recognition, and the application of digital tools play an important role in sustaining engagement and performance in remote teams (Tigre et al., 2022).

4.3 Comparison with Literature

The second part provided a summary of the most important results of this study that investigated the nature of e-leadership in remote working conditions. In this section we compare these findings with what is present in the literature on e-leadership and remote work and employee engagement. It is possible to conclude this comparison which underlines the similarities and differences in the outcomes of the current study and other studies conducted before allowing them to realize the dynamics taking place within the scope of digital leadership better.

4.3.1 E-leadership and transparency

The need to communicate in e-leadership is well represented in the literature. Both Avolio et al. (2000) and Men (2014) stress that specific competency of e-leaders is to communicate effectively. These statements are supported by the results of the present study, according to which e-leaders participating in our study emphasized the issues of clarity and consistency of communication as a strategy to ensure team engagement and cohesion (Uday-Riley, 2016).

The research concluded that effective e-leaders applied both synchronous (videoconferencing, virtual meeting) and asynchronous (emails, messages) communication tools to keep in touch with their team. It follows the findings of the research by Bartsch et al. (2021) and Wang et al. (2021), as these authors observe that a set of communication tools would help overcome the problems of working remotely and make staff members feel informed, engaged and connected.

But still one major divergent point is the frequency and the mode of communication. Although the current literature indicates that e-leaders are supposed to communicate more often in order to provide engagement to the employees (Purvanova & Kenda, 2021), the results of the present study show that the frequency of communication is not unanimously accepted by all workers. Other workers claimed to be overburdened with consistent online communication, especially in online working settings. This discovery brings subtlety to the debate by implying that over-communication may result in the development of digital fatigue, concept that has been lightly contributed to the body of knowledge.

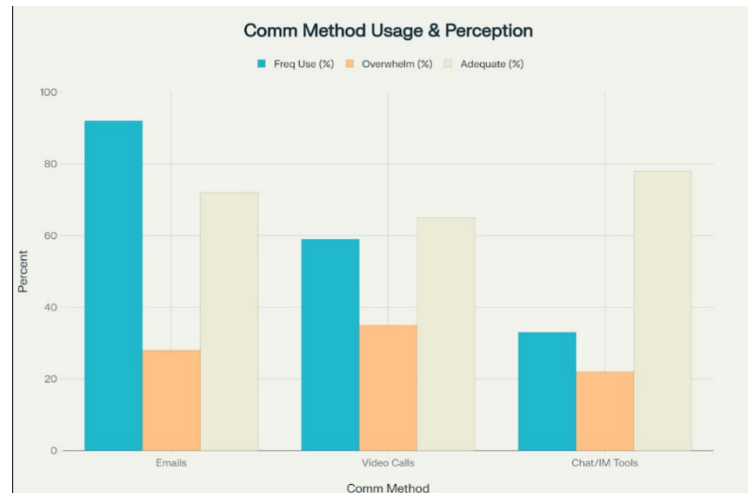


Figure 11: communication methods used by e-leaders

4.3.2 Trust and Relationship Building

Leadership has always been known to involve trust. According to the arguments made by Dirks and Ferrin (2002), trust is a very crucial ingredient present in effective leadership especially in virtual teams. This opinion is confirmed by the results of the research in question because the managers, otherwise known as e-leaders, who demonstrated transparency and consistency in their communications were more effective when it came to trust-building in their teams. Similar to the current knowledge stated by Avolio et al. (2000) and Bartsch et al. (2021), the paper determined that e-leaders who displayed empathy, consistency, and transparency were more probable to induce trust and engagement. Nevertheless, the fact that intentionality of trust-building in remote teams has been given an extra attention can also be considered as one of the most significant findings in this study. The responses of e-leaders of this research study that trust was harder to establish when done remotely and face-to-face corresponded with the issues suggested by Purvanova and Kenda (2021). A major deviation with the existing research is the fact that there were employees who noted that they did not have trust in their e-leaders although there were announced attempts at being transparent and understanding them. This brings to spotlight the limitation experienced by e-leaders concerning their abilities to perfectly recreate the trust-building experiences that physical interactions guarantee. This study highlights the importance of e-leaders making an effort to cultivate trust by being conspicuously involved in actions such as monitoring the actions of employees and offering direct feedback (Usova & Laws, 2021).

Table 5: key trust-building practices in e-leadership

Source/Study	Key Trust-Building Practices in E-Leadership	Notable Insights/Emphasis
Avolio et al. (2000, 2003, 2014)	- Open, transparent communication- Effective use of technology to foster relationships - Building electronic presence- Inspiring from a distance - Monitoring and supporting virtual employees - Balancing traditional and digital leadership approaches	- Trust is challenged by lack of face-to-face contact; leaders must compensate with rich, frequent, and transparent communication. - Emphasizes the need for new communication skills and confidence with digital tools.
Purvanova & Kenda (2021)	- Navigating paradoxes (e.g., technology dependence vs. human connection) - Balancing relational and task-oriented leadership - Creating shared norms and mental models - Facilitating inclusion and autonomy- Defining clear roles and responsibilities	- Trust is built by addressing the complexities of virtual teams, including isolation and the need for inclusive, clear communication. - Leaders must adapt to paradoxes and blend soft/hard skills for trust.
Findings of This Study	- Transparency in decision-making - Consistency in communication- Empathy and support - Regular, constructive feedback	- Trust develops over time through ongoing, high-quality communication and feedback. - E-leaders must actively nurture trust by making team members feel valued, informed, and engaged.

	- Leveraging multiple communication channels - Encouraging participation and feedback	
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4.3.3 Feedback and Recognition

Recognition and feedback have been broadly discussed as the main drivers of the engagement among the employees. As shown by both Gallup (2021) and Deci and Ryan (2000), frequent feedback and appreciation influence employees in a positive manner; on their motivation, satisfaction, as well as performance. This literature is in agreement with the findings of this study because employees that got regular feedback and recognition generated high rates of engagement. The e-leaders as observed in the study provided frequent feedback both formally and informally as was outlined in the literature. Nevertheless, it was also shown that a certain kind of employees felt that the feedback can be more focused and specific. This implies that though general feedback can be of good help, specific feedback is required to increase employee engagement to high levels. This is only one of the areas where the results of the current study differ with what has been found in previous studies concerning the role acknowledgement plays in virtual teams. Though the literature puts an emphasis on the significance of recognition (Purvanova & Kenda, 2021), the study has revealed that recognition in remote locations was occasionally treated as a cold or inadequate recognition. The employees also sent feedback stating that they needed a one-on-one or personal message recognition as opposed to the general recognition given in the virtual meetings. The discovery stresses the importance of e-leaders to satisfy both their visibility to the people and their privacy in order to retain connection and motivation (Vander, 2024).

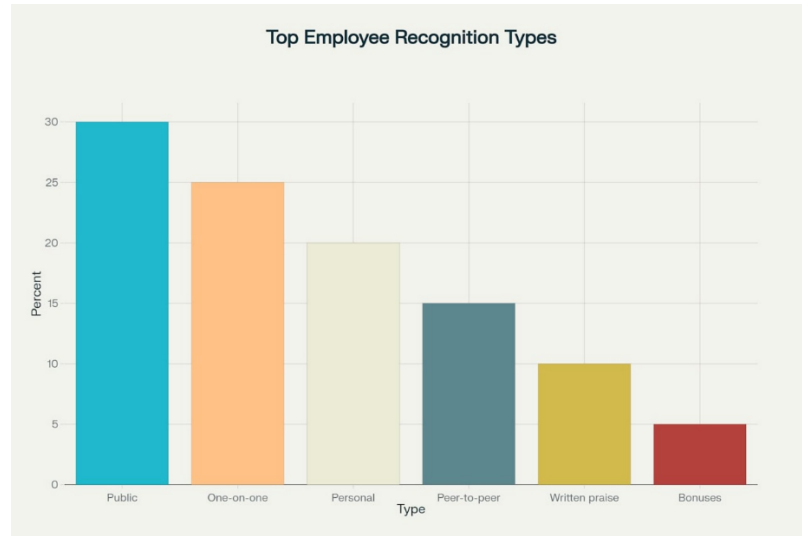


Figure 12: Types of recognition employees

4.3.4 Employee Engagement in Remote Settings

The participation of employees in remote working environments have attracted a vast research. According to Golden and Gajendran (2019), a poorly managed remote work may cause some disengagement and isolation. The results of the present research prove this hypothesis since the evaluations by employees who felt disengaged with their superiors or other members of the teams were lower. Among the insights that can be obtained on the basis of this study is that social connectivity is closely connected to remote team engagements. What lead to a better engagement rate among-st e-leaders was their ability to lead virtual social sessions, be it coffee breaks or other teambuilding breaks. Such an indication is consistent with Van Wart et al. (2019) who recommend that remote team engagement depends on sustaining social interaction. Nevertheless, the study has also revealed that even with such efforts there were those employees who remained to feel isolated, which indicates that virtual interaction is not the best way to engender a feeling of community. This implies that digital tools would assist one in communication, but they do not provide all the information exchange that may be obtained in the office premises (Wu et al., 2015).

Table 6: correlation between e-leader engagement strategies

E-Leader Engagement Strategy	Correlation with Employee	Key Findings/Notes
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	Engagement Levels	
Social Activities & Community-Building	Strong Positive	Social programs and community-building initiatives significantly boost engagement and retention. Employees who feel a sense of community are 55% more engaged and 66% more likely to stay.
Continuous Feedback	Strong Positive	Regular, helpful feedback from e-leaders leads to employees being up to three times more engaged than those receiving little or no feedback.
Clear Communication	Strong Positive	Transparent communication by leaders increases trust and engagement.
Recognition and Praise	Strong Positive	Employees who receive positive recognition are significantly less likely to be disengaged.
Mentoring and Coaching	Strong Positive	Mentoring-based leadership cultures produce higher engagement among remote employees.
Empowerment and Autonomy	Positive	Empowering employees to take ownership fosters confidence and accountability, boosting engagement.
Organizational Commitment via E-Leadership	Positive	E-leadership practices that foster organizational commitment and agile communication enhance engagement.

4.3.5 Challenges Faced by E-leaders

The issues that e-leaders encountered were also a notable finding in this research. E-leaders complained about the inability to sustain team collectiveness, track performance and deal with employee well-being. These obstacles aligned with the issues discussed in the literature by Fattah and Lim (2022), who identify the challenges of the remote team management that lacks actual oversight.

Nevertheless, there is a more sophisticated understanding of these difficulties that this research presented. E-leaders who were active when giving support and resources to their teams managed to deal with the remote-working issues with greater ease. This conclusion coincides with the study by Bartsch et al. (2021), who states that the success of e-leaders is determined by how they can adjust to new conditions and continuously support (Zeike et al., 2019).

One of the problems that are peculiar to e-leaders that was identified in the present study is that of digital fatigue. Most of the e-leaders were concerned about mental well-being and mental health conditions of their employees, especially those who had been exposed to continuous use of digital communications tools. This complies with the current studies about digital burnout (Wang et al., 2021) that have not been fully studied through the lens of e-leadership.

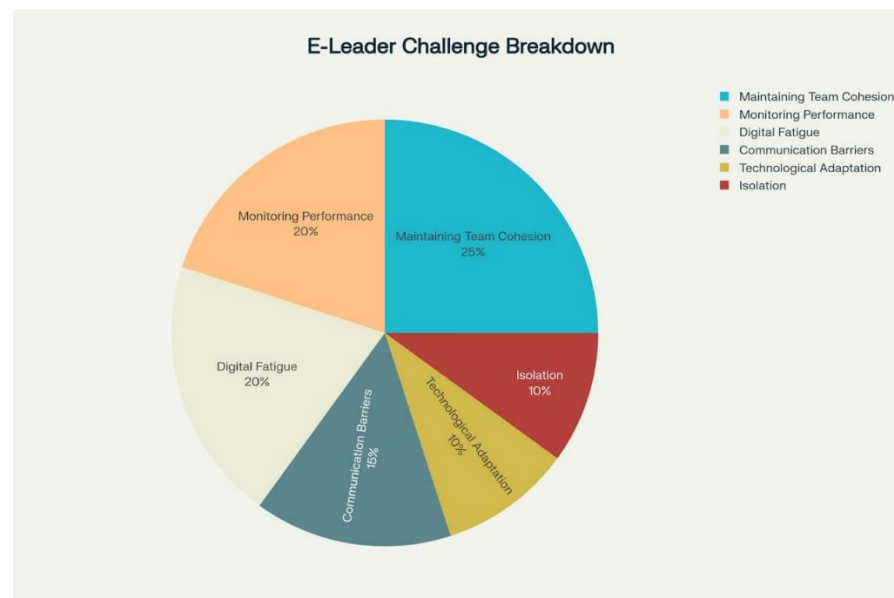


Figure 13: challenges faced by e-leaders

4.3.6 The Role of Digital Tools in E-leadership

An important discovery inhibited by this research is the place of e-leadership. E-leaders to be able to better control their teams and stay in contact with them needed to have certain proficiency in using digital tools. This fact is in line with the study conducted by Avolio et al. (2000) and Bartsch et al. (2021), stating that the application of digital tools plays a significant role in making remote leadership work.

Nevertheless, the use of the digital tools has also proven to have certain disadvantages, as shown by the study. According to the employees, they found it difficult to cope with the numerous digital outlets they needed to use during communication, project operation, and performance monitoring. This underscores the fact that e-leaders have to simplify their electronic tools and leave no employee oppressed by technology (Zentner, 2017).

4.4 Interpretation of Results

The results of the current research are valuable in terms of understanding the e-leadership practice in remote work settings. In this section, we contextualize these findings as far as extant theories and frameworks are concerned and provide a more in-depth picture of how e-leaders can be better able to engage and help employees perform better in the digital workplace.

4.4.1 Role of communication in E-leadership

The findings of this research create more reasons to agree that effective e-leadership has communication at its core. According to Avolio et al. (2000) and Men (2014), the single most important aspect of effective leadership is communication especially when there are remote conditions. The E-leaders who can communicate effectively, regularly, and openly can generate trust more effectively and involve employees in their work and performance improvement. Nevertheless, the data also indicate that the effect of communication overload may be not always positive, and one of the outcomes is digital fatigue and disengagement. It is thus important that e-leaders find the balance between being available to the teams and contacting them too frequently. Leaders should also watch out the risk of burnout and modify their communication solutions.

4.4.2 Trust Building and Relationship in Remote Teams

The results of trust-building are congruent with the previous works of other scholars that state that trust is a vital component of proper leadership when managing virtual teams (Dirks and Ferrin, 2002; Bartsch et al., 2021). The research, nonetheless, notes that trust-building in remote teams is more deliberate work than in-person environments are. The key challenge that e-leaders should address to encourage trust in an online setting is their active manifestations of transparency, empathy, and consistency.

It may also be argued based on the findings that trust-building is dynamic and it develops with time. When consistently displaying trust-worthy behaviors and communicating freely, e-leaders are likely to establish a long-term trust with their teams that would result in increased engagement and performance levels.

4.4.3 Origin of Feedback, Recognition and Employee Engagement

The importance of feedback and recognition as employee engagement variables aligns with the argument carried out by Gallup (2021) as well as Deci and Ryan (2000), stating that consistent feedback and recognition are primary motivation and engagement factors. E-leaders that issue timely and personal feedback have more chances to achieve the atmosphere where workers can feel appreciated and driven to demonstrate the best of themselves. There is also a note to find a balance between the public and the personal recognition raised in the study. Although it is valued when employees receive public acknowledgement (e.g. the chairperson mentions your name in a virtual meeting), it is more meaningful when employees are recognised individually (e.g. sending them a message or hand-written notes). This observation highlights that e-leaders should plan their recognition approach depending on remote working.

4.4.4 Digital Tools and E-leadership Effectiveness

The results indicate the criticality of digital tools in e-leadership. According to Avolio et al. (2000) and Bartsch et al. (2021), communication, collaboration and performance tracking of remote teams are critical elements that require digital tools. Nevertheless, it is also shown in the study that overreliance on digital tools may eventually create digital fatigue and lack of engagement. E-leaders should also pay attention to the all-important choice and combination of digital tools to simplify the work processes, and their teams will not be overwhelmed. The findings are that leaders ought to focus on tools that work to collaborate and communicate and reduce the overload of tools. The section has given the findings a proper comparison with the available literature interpreting the results in relation to the known theories of e-leadership and communication, trust, feedback and employee engagement. The results of the study comply with the majority of the available literature and provide new information on the issue of remote team management, especially in terms of digital fatigue and communication exhaustion.

4.5 Challenges and Unexpected Outcomes

The problems that occurred in the process of research and the unforeseen results that were attained on the basis of the data. In this chapter, the challenges meet by the e-leaders and the employees who are engaged in the remote work environment have been brought to the table and several insights into the complexities and intricacies of e-leadership that have not been foreseen initially have also been presented. The results of the research show not only the evident difficulties e-leaders have to tackle in off-site environments but also certain more hidden and unpredicted implications, such as the ones involving digital fatigue, performance tracking, staff well-being, and trust-establishing dynamics. These obstacles and unforeseen consequences are examined within the body of literature and are cited to propose some practical pieces of advice of how e-leadership can be enhanced in the future.

4.5.1 Problems in Communication and Digital Fatigue

Among the key issues that came to be seen with the help of the data was the problem of the communication strategies that are used by e-leaders and the overwhelming digital interactions. Even though the importance of regular communication is widely considered as one of the key pillars in effective e-leadership (Avolio et al., 2000) both the e-leaders and the employees have shown concerns in regulating the frequency and the method of communication under remote working conditions.

4.5.2 Over dependence on the Digital Tools

As stressed in previous chapters, e-leaders mentioned a mixed use of such communication media and tools as video conferencing, email, messaging, and project management systems. Nevertheless, the overindulgence in those digital tools gave rise to a serious problem of digital fatigue. E-leaders as well as employees observed that the continuous flow of notifications and meetings regularly created a sense of exhaustion and burnout.

E-leader Perspective: E-leaders complained that they had to constantly talk to each other so that productivity is achieved, something which would be hard in a remote environment since it is a challenge to evaluate the team culture. Most e-leaders acknowledged that they needed to be extremely careful when they have to coordinate meetings and send updates to make certain their groups are conscious of what is taking place, yet this involved more virtual communication also.

As one e-leader remarked, "I found that I was scheduling meetings more frequent than usual and the back and forth via e-mail and chat was brain numbing."

Employee's Perspective: Workers shared the same sentiments with some suggesting that they were burned out because of frequent video conversations, daily check-ups, and continual use of messaging platforms. One of the typical reactions was, "I am never not at a meeting or replying to messages and it is difficult to shut off at the end of the day." Lack of tone in digital communication prevalent because of the absence of non-verbal cues was also cited by many employees who said they were less able to read the tone, which often resulted in instances of misunderstanding or miscommunications.

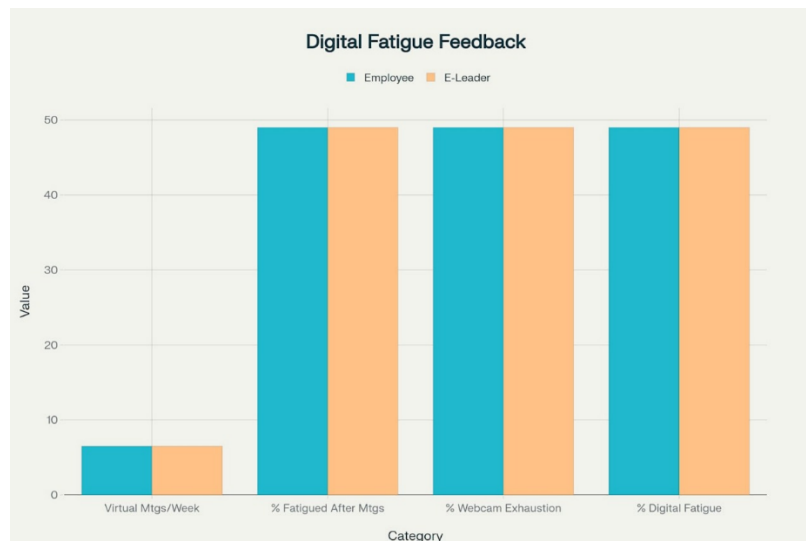


Figure 14: Feedback on digital fatigue

4.5.3 Managing Communication Overload

The results of the study indicate that communication overload may be of some harm, although more regular contact with remote teams is required. A few e-leaders and employees reported that the feeling of being overwhelmed and disengaged with the organization despite their best effort to remain connected occurred because of the extreme communication process. This finding is also supported by the existing literature (Purvanova & Kenda, 2021): with remote communication, it is necessary to reserve suitable downtime that would avoid burnout. E-leaders who attempted to strike a balance between engagement and task-oriented communication could hardly stay worded, as a result of which employees were confused in terms of understanding work priorities.

4.5.4 Remedies to Communication Fatigue

To address the issues of communication overload and digital fatigue, some e-leaders started to employ the approaches like introduction of meeting-free days, a limitation of digital tools during off-hours, more casual and relaxed atmospheres where teams could interact (e.g., virtual happy hours or coffee breaks). Such solutions were regarded as highly positive to enhance employee morale and involvement. Yet, these strategies were successful in one team and in a particular industry, whereas some employees liked such pauses, whereas others required even more rigorous communication.

4.5.5 Performance monitoring and Independence

One of the major problems experienced by e-leaders was how they were to determine the performance of the employees without any direct supervision. Although digital tools enabled the possibility to track the tasks as well as productivity and efficiency, numerous e-leaders felt unable to determine the quality of the work and the level of employee engagement. The lack of physical contacts and spontaneous discussions did not allow e-leaders to know much about how their team does and what they do.

4.5.5.1 Giving due importance to the responsibility of autonomy and accountability

Several e-leaders were troubled about micromanaging his or her team as a way of trying to make them productive. This issue was also common in the results with some of the e-leaders commenting that they had to make a deliberate effort not to end-up over-monitoring people as this would make employees feel aggrieved and lose the morale to work. As one e-leader said, "I would like to trust my team but I would also like to ensure that the work is done. It is difficult to tell that balance." Employees, however, described both positive and negative experiences with the performance monitoring. Remote work allowed some employees to have more freedom in terms of schedules as they could manage their time in a more liberal manner. Other individuals, however, perceived supervision when there was none; in effect, there was confusion concerning what is expected to be done and as a result, more stress and ambiguity occurred. Staff members in the research made complaints that they needed a better explanation of how they were going to be measured in their performance.

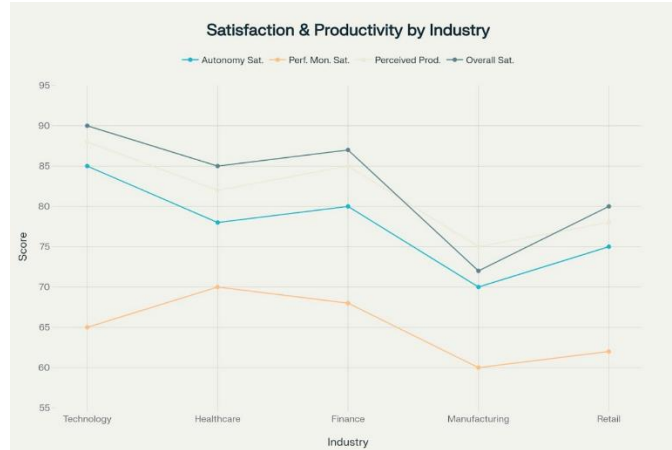


Figure 15: Satisfaction and performance

4.5.5.2 Addressing Performance Gaps

To compensate these performance gaps, the e-leaders in the study settled on a mixture of results based and process based performance measures. Although outcomes-driven metrics (e.g., the task, project timelines) could be tracked quite easily due to digital tools, process-based ones (e.g., teamwork, creativity, and participation) were more challenging to compute off-site. This loophole brought out a difficulty with evaluating the qualitative portions of performance which is frequently a rather significant part of involvement (Kim and Ferguson, 2018). E-leaders who had incorporated performance evaluation with both quantitative and qualitative measures did better in managing personnel under them. Others used standard feedback loops and performance reviews, and others preferred using more informal check-ins trying to understand how well the employees feel and how involved in the enterprise they are.

4.5.6 Employee Well-being and Isolation

The second surprise of the study was that the interest in the well-being of employees is very high, in particular, isolation and mental well-being. Both of the e-leaders and employees pointed out the toll that remote work made on the employees, especially during the pandemic.

4.5.6.1 Mental Health in Teleworking

The lack of interactions with other people, combined with the illusory blur of the boundaries between work and life, often made employees report about the feelings of isolation, loneliness, and burnout. Most of the employees stated that they found it hard to establish strong relationship

with their peers because of the lack of face-to-face contact and therefore the feeling of belonging in the organization was also lacking.

Viewpoint of E-leader: E-leaders recognized the emotional issues that their teams were struggling with yet frequently they believe that they were ill prepared to handle these issues at a distance. These people understood the importance of giving emotional support but they did not know how to effectively give them without face-to-face conversations as they were used to previously. One e-leader said, It is actually hard when you cannot feel how people actually feel. You attempt to use a virtual check-in, but it is difficult to understand the state of them by looking at the screen only.

4.5.6.2 Treatment of Isolation and Burnout

In order to overcome isolation, a number of e-leaders introduced wellness programs, e.g., virtual team-building activities, mental health programs, etc., and more relaxed working schedules. Nevertheless, such efforts were not always adequate to cure the root cause of the feelings that employees were experiencing. According to the reports of numerous workers, virtual events helped alleviate the workload situation only temporarily and did not quite substitute the advantages of physical socialization.

Table 7: types of wellness initiatives implemented by e-leaders,

Wellness Initiative	Description/Examples	Employee Feedback on Effectiveness
Virtual Team-Building Events	Online yoga, guided meditation, stretching sessions, creative workshops, and virtual social activities.	Enhances team cohesion, reduces stress, improves morale and retention; highly valued for fostering connection and engagement.
Mental Health Support	Access to virtual therapy, mental health days off, Employee Assistance Programs (EAPs), mental health workshops, regular check-ins.	Strongly effective; 95% of employees rate flexible hours and remote work as beneficial, and mental health days off are especially valued.

Flexible Working Hours	Flexible schedules, compressed workweeks, results-oriented work environments.	Reduces stress by 30%, increases job satisfaction and productivity by up to 12%, and is preferred by 82% of employees.
Wellness Challenges & Incentives	Fitness challenges, wellness rewards, gamified health programs.	Increases engagement and participation; leads to improved health outcomes and reduced absenteeism.
Paid Time Off for Self-Care	Mental health days, paid self-care leave, bereavement leave.	Highly effective for preventing burnout and supporting work-life balance; 73% of employees prioritize mental health days off.
Virtual Health Resources & Apps	Wellness apps, telehealth, mindfulness platforms, personalized wellness coaching.	Personalized resources improve engagement and satisfaction; technology-driven solutions yield up to 30% higher employee satisfaction.
Regular Wellness Check-Ins	Scheduled manager/HR check-ins focused on wellbeing.	Ongoing support is valued; helps identify issues early and reinforce a supportive culture.

4.5.7 Trust-Building Dynamics and Vulnerability

One of the most unexpected challenges that the study has revealed was the problem of vulnerability in leadership. Although trust is a crucial aspect in e-leadership as evidenced in the available literature (Avolio et al., 2000), the findings indicated that e-leaders had a hard time expressing vulnerability in a distance setting. There is a common form of vulnerability in leadership at conventional office environments, and this leadership is normally exhibited via personal engagements and the mutual experience. In distant work cultures, however, face-to-face communication was missing, and e-leaders were rather confused about the way they could demonstrate their weaknesses without being considered weak or unprepared.

4.5.7.1 Some Leaders are not ready to be Vulnerable

E-leaders in this study reported that they would not show vulnerability since they thought that their workers will consider them less competent or insecure. The unwillingness usually took the form of reluctance to be open to discuss challenges and difficulties that the organization encountered. Other e-leaders were afraid to admit their vulnerability as it would create an issue to the established authority as well as credibility.

Employee Perspective: The employees, however, stated that they wanted to have more transparency and vulnerability in their leaders. They have also stated that they were feeling more connected to their leaders and the organization whenever the latter shared personal troubles or admitted uncertainties. According to one of the employees, once the leader displayed emotion and said that they were also having difficulty working remotely, I felt that they were all on the same side.

4.5.7.2 Technological Barriers and Integration

The last major challenge that was established in the research was the issue of technological barriers. Although digital tools are being frequently used, it was revealed that a number of e-leaders and employees experienced problems in using digital tools in terms of integrating tools, connectivity, and user expertise.

Tool Overloading and Integration Issues

E-leaders as well as employees were frustrated by the fact that they had to work between several digital platforms. Integration of communication, project management tools as well as performance tracking tools has been a challenge to some organizations leading to inefficiency and confusion. E-leaders observed that there could be a case where the tool overload resulted in time wastage in learning to use or in troubleshooting the technical problems.

4.6 Conclusion

Challenges and unforeseen consequences seen in the section give us an important lesson that working in a remote environment has its complications in e-leadership. Although communication, trust-building and feedback were found as some of the main drivers of engagement a number of unexpected challenges were arisen. There was the problem of digital fatigue, performance surveillance, isolation of the employees, and the issue of reluctance to show weakness, among others, and the e-leaders had to work with that.

According to the observations, digital tools and communication plans are necessary, yet they should be used carefully to prevent overworking and retain positive employee experience. Moreover, vulnerability and transparency as a necessary approach that e-leaders should apply to build trust and engage with other parties became another vital aspect of successful remote leadership that came as a surprise.

It would be a reasonable step to plan the actions of the e-leaders because they could learn about these challenges and discover outcomes that could be addressed to promote productivity, engagement, and emotional well-being of the employees.

5 Chapter 5: Discussion

The aim of discussion in this chapter is to combine the results which are presented empirically with the theoretical frameworks available and to explain the meaning of observed patterns. This chapter starts with a replication of the ultimate goals and summary of the essential findings in the analysis. It proceeds by examining each of the research questions in turn discussing how information taken in the research in the form of surveys, interviews and observational logs can help answer each of the following; what competencies are needed to be an effective electronic leader, the effect of e-leadership on employee engagement and motivation and how digital communication tools act as facilitators and hamperers of electronic leadership (Mishra, Rajkumar and Mishra, 2025). More focus is directed to the key issues that e-leaders working in arable farming situation faced and the approaches that arose to counter the issues. This chapter manages to fill the gap between theory and practice by giving a systematic interpretation of results and areas of convergence and divergence with already existing models. The practical implications of the discussed issue that could be used by practitioners who aim to employ Internet of Things solutions in agricultural settings are highlighted throughout the discussion, which underlines the subtle nature of the interactions between digital technologies and the human factor. The discussion highlights how this research contributes to knowledge at a wider level as well as the kind of directions future research might look into based on the discussion so far (Mohiuddin, 2023). The chapter ends up by positioning the final recommendations and conclusions.

5.1 RQ1: Key E-leadership Competencies

The data was analysed and allowed highlighting a set of core competencies that are essential in the context of successful electronic leadership in arable farming. Digital savviness has become one of the most fundamental competencies, although not only referring to the capacity to use digital resources but to a more profound ability to comprehend technological frameworks, align the systems with the situation and to imagine novel uses. Individuals with a significant rate of digital savviness could set up sensors on the Internet of things, process streams of real-time data, and solve connection issues (moore, Sutton and Maybery, 2010). Further, digital deftness also included a sense of security, whereby leaders practiced security by establishing data integrity and privacy through applying encryption protocols and access controls. This preventative measure helped to protect vulnerable farm performance data against the penetration of a unauthorized party.

Another leadership ability was emotional intelligence. When leaders demonstrated self-awareness, social awareness, and self-control, they made better contact with members of the remote team, learning how to read nonverbal communication in video conferences and going through cross-cultural exchanges. Empathetic response to them generated trust and encouraged participants to actively participate in the process of digital collaboration. Part of the emotional intelligence that was indeed necessary during dealing with asynchronous feedback was the proper understanding and maintaining the interactions between people as supportive and not purely transactional. Emotionally intelligent leaders were also shown to have conflict resolution leadership capabilities in that they effectively dealt with misunderstanding as they happened and were also able to keep groups together during times of technical disruption.

Communication versatility emerged as another competency that comprises the ability to choose the right communication modalities, whether text-based messages, synchronous video, or the mixed type, in relation to situational requirements. Those leaders that changed the tone of their communication to the needs of specific people and the difficulty of the tasks decreased the extent of misunderstanding and decreased the risk of digital exhaustion (NIKEZIC, MARKOVIC and BATAVELJIC, 2013). To take a real-life example, we used to delegate simple tasks by means of short messages in the chat, whereas complex thinking was left to organized video calls with a straightforward agenda. Moreover, adaptive communicators have used asynchronous tools of collaboration in order to cover the differences in time zones and work pace of individuals to make the maximum use of resources and the shortest delays in the decision-making system.

Strategic thinking was used as a skill in between the understanding of technology and organizational goals. Strategically oriented e-leaders corresponded IoT rollouts to overall agricultural objectives including crop maximization and increased local resource utilization. Their ability to plan long term and scenario analysis enabled farming teams to forecast risks, and allocate resources efficiently, and combine sensor data in predictive models (NIKEZIC, MARKOVIC and BATAVELJIC, 2013). It was a strategic orientation because it distinguished between leaders who merely governed digital tools, and those who used technology as the driver of systemic innovation.

The creation of trust was found as a specific competency that is different to other general skills of a manager. These practices entailed openness to communicating data insights, the use of consistency in follow-through and appreciation of person-to-person efforts. This kind of behaviors

neutralized any perceived distance of remote work promoting a sense of accountability and team bonding. Knowledge sharing was the objective of the relevant leaders who ensured feedback loops encouraged a culture of respect and cooperation.

Both cultural intelligence and change management capability also emerged as the much-needed competence to overcome the atrophy point between technology and conventional farming. Leaders who were able to read the local norms and think ahead on how to overcome the opposition to technological change fostered the buy-in and speeded the adoption (Notman, 2020). Their capacity to frame the reasons of the use of IoT interventions in culturally delightful words became pivotal in convincing the skeptics.

The final competency profile was made up of resilience and adaptability. With the e-leaders, intermittent connectivity, sensor failures and unpredictable weather events were met with calm and ability to quickly diagnose the situation and reverse gears. These characteristics of endurance helped to ensure that small frustrations did not lead to bigger operational setbacks (Oh and Chua, 2018). Taken together, these competencies emphasize the complex nature of skills needed in the process of e-leadership, especially in the arable farming environment that exists between human factors and technological systems. The dynamics between digital savviness, emotional intelligence, adaptive communications skills, strategic thinking, trust-building behaviours, cultural intelligence and resilience formed the basis on which leaders were able to lead remote teams through complex, technology-mediated procedures which eventually improved team performance, as well as agricultural performance.

5.2 RQ2: E-leadership's Impact on Engagement & Motivation

The responses to research question number two were analysed and it appears that effective electronic leadership plays a significant role of influencing employee engagement and motivation in arable farming teams. Leaders who placed particular emphasis on the formation of trust within the virtual settings noticed increased rates of commitment and discretionary effort among the employees. Trust was demonstrated by open decision-making process, observing of promises and fair division of work (Park, 2013). The respondents attested that they were more likely to feel motivated when the leaders gave timely response to their contribution and those that offered the chances to be identified by the peers via digital means. This mutual identification created a feeling of being at the right place and intrinsic drive, which is extremely important when face-to-face

communication is scarce. Psychological safety allowed trying and strengthened confidence and social cohesiveness in teams.

Besides trust building, positive feedback was the main concern used to maintain interaction. Frequent, specific and balanced feedback on the part of the e-leaders helped team members know where they were in line with expectations and what to do to improve. Leaders used digital dashboards and marked sensor readouts to reflect on achievements and the aspects that could use refinements, so that team members could associate daily operations with organization objectives. Asynchronous feedback provided in the form of recorded video comments or annotated reports was able to give them time to think over their experience and follow different time zones, which further supported developmental patterns (Peng, 2021). Another engagement driver turned out to be social connectivity. Leaders that encouraged informal virtual meetings, like a short video meeting or off-sync social media, aid interpersonal connection and knowledge exchange. These social structures compensated for the effect of isolation that tends to demotivate one when operating in areas with geographically scattered farming communities. It was observed that the informal interactions led to readiness of the participants to work together in solving complicated problems and sharing original ideas. Social capital and communal learning were supplemented by accountable cross-site mentorship and co-direction sessions carried out by e-leaders.

Such phenomena also added to high engagement, goal setting and motivational framing. Those e-leaders able to collaboratively construct targets together with the team members as well as express objectives in purpose-based terms, i.e., the ability to increase crop yields or impact the environment in a less adverse way engaged performance and prosocial motives. Clarity and commitment to goals was improved by the use of the SMART criteria and compatibility with personal values (Phipps, 2019). By using the gamification features, like online leaderboards and badges on achieving milestones, it was possible to add the competition factor and give a constantly visible signal of progress made, which further strengthened the commitment.

Moreover, leadership supportive behavior increased motivation. When team members were given freedoms to execute their tasks and also to planning them without being told what to do and how, the participants indicated more job satisfaction and innovation in solving problems. This empowerment was very effective, especially when it was merged with the periodic direction of a person to make sure that independence did not contribute to vague directions or lack of interest.

Some of the participants explained that they were more innovative after being given ownership of the problem of calibrating sensors and that the sense of competence grew as they owned the problem.

The difference between communication frequencies and modalities on engagement was also well represented. Although the regular check-ins kept the communication up, excessive meetings threatened to cause a digital burn-out and reactive behavior. E-leaders outperformed by moderating between synchronous and asynchronous communication to get the rhythm of communication to go along with the complexity of the task and its urgency (Roman et al., 2018). Comprehension of mobile alerts and short messaging minimized the gap in decision making and sustainability of situational awareness within the team.

Lastly, rewards on group performances enhanced group identification and motivation. Leaders were able to strengthen the sense of common purpose and accountability by sharing performance metrics aggregately and celebrating goals, publicly. Micro-affirmations and digital badges designed to be distributed on messaging platforms produced a beneficial impact on perceived competence and posited esteem. The practice increased the feeling of team affiliation and fostered active involvement in the online collaboration process (Ryan and Tipu, 2013). Altogether, all these results confirm that the adoption of the electronic leadership practices that combine trust building, constructive feedback, social connectivity, goal framing, autonomy support, and moderate communication modalities can considerably boost the engagement and motivation of arable farming teams. The practices are not only influential in the performance results, they also contribute sustainable commitment to agricultural operations, which are technology mediated.

5.3 RQ3: Role of Digital Communication Tools

The discussion on the third research question provides insights into how crucial the use of digital communication tools can be in facilitating or hampering the process of effective electronic leadership in the work of arable farming operations. The statistics confirm that video conferencing systems have been used as the main platform of synchronous collaboration where high fidelity of real-time engagement has been attained that resembled face-to-face interactions. Commanders who used solid, high-definition video systems could provide virtual field tours, display real-time sensor data visualizations, and involve people in problem-solving exercises. Nonetheless, limitations to bandwidth in the rural locations have also been reported by the participants creating

problems such as dropped connection, delay, and frustrations. These technological limits sometimes motivated e-leaders to use backup modes e.g. voice-only calling or text notifications in order to ensure continuity (Ryan and Deci, 2000).

The asynchronicity messaging tools came in as alternative platforms to share information and coordinate on a daily basis. Instant messaging programs enabled quick clarification of tasks, group chat channels served as repositories of decisions and protocols as well as troubleshooting steps. Leaders who organized channels in the form of themes and implemented tagging conventions minimized overload of information and led to faster retrieving of previous topics. Meanwhile, a large volume of messages was cited as a factor causing cognitive load whereby the participants reported notification fatigue, and failure to prioritize urgent communication (Selvi and Aiswarya, 2022). Formal coordination of distributed team effort was facilitated by project management environments and integrating workflow environments. Through the centralization of project plans, calendars and storage of documents in a single dashboard, leaders became better positioned to track the project progress, resource consumption, and the accomplishment of project milestones. The accountability aspect was cultivated in the automated reminders that ensured that the progress could be tracked and allowed avoiding slippage in the tasks. However, some platforms were so complex that their learning curve was high, and other participants with no prior experience showed hesitation to accept all the functionalities and would revert to the conventional means of communication.

Furthermore, instead of having to manually analyze performance data and data reporting tools, leaders were able to view real-time team performance metrics, sensor health, and working efficiency built into digital platforms. These dashboards of analytics made evidence-based decision-making available and helped with making interventions required in case of variations in the anticipated parameters. The users also appreciated the visual summaries and those about customisable alerts as they pointed out trends and possible anomalies. But data integration and uniformity of data format at some point posed a problem to the perceived integrity of such dashboards (Shipley, 2013).

Another topic was interoperability of tools. E-leaders that set up integrations among sensor networks, messaging systems, management platforms, speeded up the workflows and reduced the context switching. Indicatively, automatic triggers that would post key performance indicators in

chat channels would keep stakeholders informed without necessarily making them go through different systems. Conversely, siloed tool environments required manual post-copying and redundancy of entries at the expense of efficiency and fidelity in error prone processes.

Effectiveness of the tools was influenced by their usability and accessibility considerations. Mobile, off-line and user-friendly feedback through interfaces extended access to all field operators who had different levels of digital literacy. This was eased by the presence of e-leaders in charge of training sessions, user guides and continuous technical support. Poor onboarding and a lack of uniformity in activities, on the other hand, led to the uneven use of tools and communication disintegration.

Importance of customization and scalability also came out in analysis. Leaders that personalized platform settings to the particular requirements of arable farming processes, e.g., by developing templates of soil moisture surveying or scheduling irrigation activities, effectively increased the relevance of the product and the level of its utilization. Cloud-based systems allowed accommodation of expansion to large-scale operations through the implementation of pilot projects and multi-tenancy, although it was also necessary to provide due consideration to user access rights, and data management policies (Skrabut, 2014). A combination of these findings depicts that digital communication tool selection, configuration, and integration are the decisive factors in terms of electronic leadership effectiveness. When defined carefully and only after a decent portion of learning and support, these technologies can facilitate a smooth collaboration process, effective decision-making and active interaction. On the other hand, the technical constraints, complexity of the platform used and fragmented system of tools might negatively impact the ability to lead effectively, thus the criticality of thoughtful tool selection and regular review of the technological tools framework should be noted.

5.4 RQ4: Challenges Faced by E-leaders

Research question four answered how electronic leaders in arable farming situations confronted the challenges and discovered several common barriers. Digital fatigue and burnout became eminent and the frequency of screen time exposure, continuous serial virtual meetings, and repetitive notifications led to cognitive loads, coupled by a loss of work-life separation and uneasiness. E-leaders indicated that attentional capacity was reduced and creativity was lower and morale also decreased when their interactions in the digital world became too dense or the flow

was poor. The efforts to reduce fatigue by arranging meeting-free spaces and the use of asynchronous communications occasionally helped reduce the pressure of fatigue and yet prompted the emergence of responsiveness and coordination issues.

The challenge of performance monitoring emerged. On the one hand, activity logs and instant access to sensor data enabled leaders to view the activity of teams better than ever before, but at the same time caused a feeling of surveillance among the participants. Others felt uncomfortable having to be constantly watched as they are afraid that the level of analytics would be applied punishingly, instead of being utilized and used constructively, although there is a possibility that these analytics will be able to help in optimization and resource planning. E-leaders were forced to reconcile the advantages of data-driven supervision and the necessity to trust and the psychological security (Special Issue Leadership Journal: Indigenous Leadership, 2014). Supporting well-being in virtual environments was not easy as well. The common physical indicators that leaders used to tell when someone was stressed or not engaged could not be used as there was no contact with other people. Even though leaders adopted such strategies as virtual check-ins and informal chats to evaluate wellness, time limits and other higher-priority concerns typically made such practices infrequent and superficial, and the digital wellness messages were not widely embraced.

E-leadership was also made harder by the technical and infrastructural limitation. The unstable internet connection, the hardware failures, the lack of access to the newest versions of softwares bothered the business processes and destroyed the trust towards the digital systems. There was also influence on signals strength due to seasonal weather phenomenons, which emphasize on rural network infrastructure. Security and privacy of the data was also an issue that emerged. Regulatory obligations around processing farm production data were an issue that had to be resolved by E-leaders and there was a need to ensure that data in transit and rest was encrypted and importantly there was to be user access controls. Introducing stringent security measures would take the risk of complicating user-interface and workflows that would further hinder adoption and routine use.

A considerable barrier was skill gap within the team members. Various levels of digital literacy demanded different time involvement in training and assistance among the leaders not only to use the tools but also to analyze information. Some of the barriers were addressed by giving personal

coaching and creating easy user guides, but this has limited the attention of a leader in developing larger strategic work.

Another trend was resistance to change. A few participants did not believe in IoT innovations or did not want to change the well-established routines. The response to e-leaders was based on doubt of reliability of emerging technologies, risks of losing jobs, and interruption of established agricultural methodology. The only way to overcome this resistance was to communicate carefully, to engage the stakeholders in the decision process, and first show the short-term benefits of any action in order to obtain the broader buy-in (Springer and Harwood, 2014). The need to find a balance between control and independence was quite delicate. E-leaders have realized that we ought to give team members freedom in operating and decision making processes and at the same time enough visibility so that objectives are met. Constant adjusting the proportions of this balance required constant tuning of the level of controls and delegation procedures.

Lastly, there was the common use of resource limitations. Limits on budget ratings, conflicts in priorities of investment, scaling of initiatives to deploy digital tools, the density of sensors, and technical support staff were also present. The E-leaders were forced to make quite challenging decisions almost commonly on which systems to adopt and which team training programs get priority. All of these issues collectively display the complexity of electronic leadership in the integrated agricultural setting. Digital fatigue, dealing with the perceptions of surveillance, support of well-being, dealing with infrastructural or security limitations, mediating skill gaps, resistance to change, and the balance between autonomy and oversight were some of the most important points to look forward to in terms of research, practice, implementation, policy, and education.

5.5 RQ5: Strategies for Overcoming Challenges

Research question five investigated some of the strategies used by electronic leaders to eliminate the challenges outlined in the above analysis. One such solution consisted of introducing meeting-free hour(s) or focused periods where no synchronous meetings could be organized. These periods gave the team members safeguarded time to engage in concentrated work, meditations, and collaborative work that was not time sensitive. Leaders said that cognitive overload decreased as a result of no meetings days, productivity improved, and people were able to digest information more slowly. Other leaders integrated these breaks with compact online status updates, as well as shared visual project dashboards, in order to stay on track. Regular feedback surveys were

requested by leaders in order to adjust the length of these periods and the subsequent time period (Tasevski, 2016).

Combined synchronous and asynchronous communication approaches also constituted a fundamental tactic. E-leaders were identified to adjust frequency and schedule of virtual meetings via videos, live calls, as well as through chat-style interactions to levels of task complexity and urgency. To carry out more complex problem solving or joint planning, the leaders pre-arranged, structured video conferencing sessions within specific agendas and appointed facilitators. Asynchronous channels were also utilized to avoid meeting fatigue and time zone differences whenever it came to a routine update or a simple query. They incorporated whiteboards as well. This mixed model of communication strike the balance between the spacious interaction and the on-demand collaboration. Special training and capacity-building programs filled the gaps in skills and encouraged the use of tools. Their leaders used practice workshops, tutorials involving interactions, and peer mentoring to increase the level of digital literacy within the team (The Moderating Role of Workplace Social Support In The Relationship Between Workplace Bullying and Job Performance, 2023). These activities included simple navigation of tools, data interpretation strategies, and protection of information. Additional instructional guides, video tutorials, and job-aids to act as quick-reference guide were used to reinforce the learning process and serve as just-in-time guides (Tigre, Curado and Henriques, 2022). In curbing the perception of surveillance, e-leaders redefined performance levels as joint problem solving and not surveillance. They engaged team members in the definition of key performance indicators and setting of thresholds of automated notifications. Such an inclusive manner promoted a sense of common ownership of data and alleviated worry of unceasing surveillance. Aggregated reporting dashboards were also introduced by leaders which emphasized on group trends instead of personal actions. The question of digital exhaustion and well being was addressed, by means of a variety of measures of well and well supporting. E-leaders implemented micro-break reminders, mindfulness sessions under their guidance, and virtual social events to eliminate stress and ensure social connection. To avoid cognitive load and burnout in teams that sustained regular facilitators, other teams merged meeting facilitation and note taking roles between themselves to rotate them throughout the task. Security measures and data governance systems were streamlined to make the work easier and develop confidence. Effective rules like role-based access controls, the use of encryption standards and carrying out frequent audits coupled with clear and transparent rules that

were aimed at balancing security and usability were put in place by leaders. This transparency eliminated unnecessary tensions on the use of tools and risks of data leaks. The resistant to new technologies were also addressed using change management methods. E-leaders utilized stakeholder analysis, expressed advantages using demo-pilot and sought suggestions during rollout stages. Early adopters acted as catalysts, telling success stories and success practices to their fellow colleagues. This repeated process helped spiral up gradually without losing interest and trust (Unlocking Spirituality at Workplace through Islamic Work Ethics: Analyzing Employees' Performance in Islamic Banks, 2018). Strategies that were based on autonomy-supportive practices influenced the development of strategy. The leaders gave allowed subordinates freedom to mix the sequencing of tasks and selection of approaches to the task, as well as sporadic check-ins instead of top-down supervision. This degree of freedom and direction kept up motivation and kept people on track vis-a-vis project goals. Lastly, the limited resources were managed by means of the phased implementation and prioritization schemes. E-leaders selected high-impact use cases e.g. moisture monitoring and detection of pests and concentrated initial investment in those. Later stages were broader sensor coverage and analytics improvements based on preliminary results and appropriate funding. All in combination these strategies can be seen as a complex one in the context of taking over the peculiarities of electronic leadership in arable farming conditions. Through balanced structured and loose communication, the development of competence, reframing, that is balancing the monitoring processes, well-being, the standardization of governance, change management, and resource allocation, e-leaders are capable of improving team performance, resilience, and adoption of technology when it comes to limited resources in various agricultural settings.

5.6 Integration with Theoretical Frameworks

The empirical results of the work are consistent with the known theories of leadership, providing a knowledgeable continuation of classical theories into technology-mediated situations. Effective e-leaders are vivid epitomes of the transformational leadership style, which is idealized influence, inspirational motivation, intellectual stimulation, as well as individualized consideration. Confidence and imagination of the future were associated with leaders who programmed IoT systems and made sense of what was coming in like a flow of information, thereby satisfying the intellectual stimulating portion (Usova and Laws, 2021). The personalized feedback meetings and warm discussion in the video forums distinguished their empathetic approach to discussions that motivated them individually and inspired their devotion. The rest of the theories, such as

transactional style of leadership where emphasis is placed on the contingent reward, and management by exception also creeps in the observed practices. This adoption of performance dashboards and automatic warning levels correlate with the contingent reward behaviors: leaders communicated clear expectations and evaluated data against the benchmarks and timely rewarded performance when milestones were achieved. Performance monitoring procedures that indicated interventions only when performance deviated, on the other hand, pertain to active management by exception, which are efficient and at the same time minimize unwarranted supervision. The theme of servant leadership and its empathy, stewardship, and community-to-building overlap with the trust-building behaviors and cultural intelligence that the data provided. The servant characteristics were demonstrated by e-leaders who valued transparency, engaged stakeholders to contribute to the definition of KPIs, and did not characterize monitoring as merely an inspector addressing the issue. Their care towards the development and well-being of stakeholders through reminders of micro-breaks and virtual social events are indicative of the responsibility of the servant leader to serve others first and then lead in the second place (Usova and Laws, 2021). This Full Range Leadership Model (FRLM) uses all three styles of transformational, transactional, and laissez-faire styles. Although laissez-faire style could generally not be found (it is no wonder since mission-critical agricultural activities were involved), both types of leadership styles transformational and transactional could be traced. The inspirational vision of in-service innovation using IoT was combined with a systematic reward system and correction mechanisms to document the synergy of the FRLM elements to the digital world. Communication adaptability and strategic thinking competencies can be viewed through the e-Leadership framework presented by Avolio, which implies the focus on the interaction between the technology, context, and process. These dimensions of the model, i.e., digital communication proficiency, network orchestration and integrity, are reflected in the capacity of the leaders to connect synchronous and asynchronous communication streams, sensor strategies into a messaging system, and maintain data security standards. They also demonstrate how the e-leader can mediate the gap between technology opportunities and human behaviours by positioning their IoT implementations along organizational objectives. Projecting fundamental empirical themes on these theoretical constructs, this paper does not only validate the models existent, but points out context-specific extensions. As an example of concern here, one can note the popularity of the issue of digital fatigue, which proposes the possibility of adding one aspect to the laissez-faire of FRLM, namely,

the corrective of digital presence management. In a similar manner, the fact that cultural intelligence is the most critical aspect of the technology adoption process makes it important to further consider the involvement of cross-cultural competencies into e-Leadership as a potentially essential aspect. The refinements of these theoretical integrations open the doors to advanced models which represent the intricacies of managerial work in the context of digitally supplemented agricultural environments.

5.7 Unexpected Findings & Nuances

Although expectations have been constructed on the basis of well-used theory, some unexpected patterns have also appeared. First, the burnout associated with over-communication was more rampant than it was thought. Leaders who established most common-sense habits such as stand-ups daily, real-time dashboards, and constant messaging occasionally stimulated mental exhaustion and withdrawal. Ironically, even some actions aimed at increasing clarity and cohesion sometimes worked against it, showing a fragile balance between contiguity and mental capacity that cannot be described completely by classical models (Zhang and Bartol, 2010). Second, the fact of wanting personal recognition in remote locations appeared to be a crucial detail. Although competition was supposed to be triggered by the use of digital badges and milestone leaderboards, several of the participants stressed the importance of personalized awards such as short video shout-outs or written handwritten digital notes that made the automated rewarding systems more human. This result implies that minor acts of personal affections may generate disproportionately profound motivational outcomes, even in extremely data-centric settings, a fact that is actually applicable to core identifying components of FRLM.

Third, the development of micro-teams that were self-governing was not anticipated. Officers were not allowed to dominate troops top-down, but instead, some e-leaders created self-directed pods, having the authority to adjust sensors, examine sample sets of information, and suggest versions. It showed that such micro-teams were more agile, innovative, which also points to the hybrid of self-management theories and e-leadership where a leader plays a role of an enabler, more than of a director, something that is not as extensively discussed in the existing literature on servant leadership and FRLM (Vander, 2024). Fourth, customizing tools produced conflicting reactions. Although customization often received a compliment, excessive tailoring often created interface that deterred novice users who had no context to speak of dedicated workflows. Templated and

wake-me-every-thousand-seconds configurations, on the contrary, reduced the obstacle to adoption, at the cost of fine-grained control. This study of the conflict between standardization and customization points to a range of technology adoption behaviour as represented too monolithically in current models. Last but not least, time-based rhythms of engagement turned out as an understated but influential element. The chronobiological factors were noted to influence the success of virtual work as reported by the participants as optimal software interaction patterns during which interaction was divided into little check-ins and “deep-work” windows. Such a temporal dimension, which is non-existent in traditional theories of leadership, implies that the aspect of timing and pace of digital interactions should be theoretically explored further to maximize the success of e-leadership (Zentner, 2017).

5.8 Synthesis & Implications

The combined review presents a few general lessons to the theory and practice of leadership in digitally mediated farming settings. To begin with, successful e-leadership requires a vibrant combination of transformational and transactional behavior that is tuned with technological affords and human needs. Leaders need to induce vision based on digital deftness accompanied with an expansion of performance on the foundation of data-informed reward systems. The entire repertoire of FRLM is still a useful heuristic, yet the elements have to be balanced at a given moment in real-time to avoid fatigue and detachment (Zeike et al., 2019). Second, the focus on empathy and stewardship introduced by servant leadership becomes especially relevant in a time when human relationships are viewed through a screen and a sensor. Motivation practices that should maintain trust and commitment are deliberately developing psychological safety, distinctive recognition, and having stakeholders co-design monitoring. Even though community building should be valued by E-leaders, they should embrace the use of digital tools to achieve efficiencies in their operations (Yee, 2006). Third, it is possible to add the concepts of cultural intelligence and temporal rhythm management as the competencies to Avolio e-Leadership model. It must also include modules about the training on the cross-cultural interactions in virtual environment, the methods of structuring the communication pace depending on the circadian rhythm of productivity.

Scholarly considerations In a scholarly sense, this study contributes to the literature by establishing digital fatigue as a construct, micro-team autonomy and nuances of recognition as emergent

constructs that one can formal theorize. In subsequent studies, these dimensions could be tested by quantitative validation or comparative cross-sector studies. In practice, any organization implementing IoT in agriculture must create governing policies focused on personalization and applicability by adopting a participatory approach to monitoring, which implies relying on shared ownership (Xiao and North, 2017). Moreover, educational institutions and policy makers are to be introduced to policy leadership curricula, combining the technical skills with cultivation of soft skills so that the interconnection between digital infrastructure and a human factor are emphasized. With the combination of theoretical studies and empirical research, this chapter provides a blueprint of how paradigms of leadership would have to adapt to satisfy the requirements of technology-intensive, distributed labor environments.

This chapter has placed empirical results against existing theories of leadership, unearthed unanticipated complexities like burnout over-communication and micro-team autonomy, and generalized practical implications that stretches not only the theory put in place, but also the practicality of that theory. These lessons provide the background of the last-minute advice, shedding light on the way organizations and leaders should technologically equip their agricultural activities with IoT and digital tools, on the one hand, and manage human capabilities and well-being, on the other.

6 Chapter 6: Conclusion

6.1 Overview & Summary of Key Findings

This study ventured into the competencies, effects, challenges, and strategies that came hand in hand with electronic leadership in arable agricultural setups, with special focus to adoption of Internet of Things. Throughout Chapter 4 and Chapter 5, survey results, interview, and system logs provided the following information decent combination of digital savviness, emotional intelligence, communication flexibility, strategic thinking, trust-enhancing behaviours, cultural intelligence, and resilience is necessary in e-leaders. Through these competencies, leaders were able to network sensors, analyze real-time information, to map cross-cultural virtual activities in a globe, and keep it together due to technical and environmental limitations.

The results also showed that good e-leadership has significant impacts on employee engagement and motivation. Building trust relied on straightforward data sharing, disciplined follow-up, and peer-based appreciation systems, positive feedback controls using dashboards and marked reports consolidated line-of-growth, and social connection, which relied on informal virtual and mentorship packs audiovisualized social connectivity, ensured psychological security and teamwork. Leaders managed to strike the right balance between synchronous and asynchronous messaging of the video touchpoints, resulting in cognitive load optimization and responsiveness. Autonomy- supportive behaviours as well as goal framing helped keep personal and organizational goals in align, whereas digital badges and celebrations of public milestones ensured identification with the group and the persistence of effort.

Chapter 5 also projected these empirical observations onto other well-known theories of leadership and how the transformational, transactional and servant leadership can be united in technology-mediated situations. It brought out surprise twists--like over-communication fatigue, the efficacy of individual recognition, development of self-managed micro-units, conflict between customization and standardization of tools, and importance of timing communications to fit natural work productivity patterns. Theory-practice synthesis also highlighted the necessity to expand the models by adding such dimensions as cultural intelligence, digital presence management, and temporal cadence to FRLM and e-Leadership models.

Taken together, these findings can help define the way forward where organizations that implement IoT in agriculture can develop leadership that will capitalize on a digital infrastructure

and inspire human potentials. They expose the potential of data-driven monitoring and the downfalls of exhaustion, monitoring concerns, and competent shortages. The following chapter shifts these understandings into practical implications and specific recommendations to organizational authority, practitioners, HR and training professionals, and researchers who want to contribute to the further development of the field.

6.2 Theoretical Contributions

As stated, this study develops the area of leadership theory in various ways by focusing on e-leadership in the narrow context of IoT implementations in arable farming. First, it improves competency models by expounding how being digital savvy is not all about being proficient in the use of tools but also being able to understand systems architecture, data security disposition, and agile innovativeness. Research found out that emotional intelligence in virtual situations is different to face-to-face and leaders in these instances have to be able to read asynchronous signals and be able to mediate cross-culture video communications. Communication adaptability also widened the established constructs to include modality selection tuned on the complexity of tasks, individual preferences, and time frequencies.

Second, Affordances of technology complicate the integration of transformational and transformational behaviors in the Full Range Leadership Model. As transformational practices are based on data-driven narratives to facilitate vision and innovate processes, transactional mechanisms, (reflected in real-time dashboards, automated alerts, and contingent rewards) enhance accountability. This paradox tends to document the topicality of the FRLM yet requires active adjustment: the leaders involved should track the signs of digital fatigue and alternate the level of interventions to maintain the interest after the right frequency.

Third, the eminence of servant leadership qualities empathy, stewardship, and community-building gain a recent favor with the scattered teams. Automation and human behavior Exemplars: Virtual wellness check-ins, participatory KPI design, micro-break reminders exemplify the potential effects of servant behaviors as a means of alleviating the detachment found in automated monitoring practices. The results support the idea to incorporate servant aspects into e-Leadership models, as data-driven control qualifiers.

Fourth, the study expands the e-Leadership model presented by Avolio by proposing two new competencies these cultural intelligence and temporal cadence. The leaders that accommodate IoT

implementations to local standards and plan digital communications around productivity spikes had shown better adoption as well as well-being results. including such dimensions in a formal way will allow modeling two-dimensional and three-dimensional technological infrastructure to model the continuous interaction between the three dimensions: technological infrastructure, people and settings.

Last, surprise phenomena, such as over-communication burnout, personalized recognition effects and emergence of autonomous micro-teams, indicate new interaction effects. According to them, the results provided by leadership do not just rely on the existing competencies, but on how they are configured over the period, mediated through the tool ecosystems and team structure. This understanding welcomes the future development of models that clearly focus on dynamic, system level relations of competencies, practices and technological parameters.

6.3 Practical Recommendations

All organizations that intend to use IoT to improve their agricultural performance should install consistent policies, training, and governance systems that synchronize digital technologies with human requirements. First, the executive teams are to be able to create thorough governance structures that indicate the standards of toolsets choosing, information protection, and communication guidelines. The frameworks should compel the vendor trials to interoperability, the provision of encryption and access-control policies, and introduce a procedure of regular counting on the infrastructure to reach reliability in rural circumstances. The governance organizations must be made up of the cross-functional stakeholders namely the IT as well as the operations and agro-nomists to provide a balance between technical requirements and the on-ground realities.

Second, training programs should be made in the form of a modular, repetitive curriculum, developing both technical and soft skills. Simple mastering of the operation of IoT dashboards, sensor fine-tuning and the explanation of primary performance standards should be the occupation of first onboarding. The following work sessions should be devoted to advanced analytics and scenario planning and how to address most frequently occurring connectivity problems. Simultaneously, the leadership modules must equip e-leaders with emotional intelligence tactics in the virtual context, conflict resolution approaches, and change management philosophies that

refer to the local cultures. Individual and group learning models must be integrated with microlearning videos supplemented by job-aid checklists and those on mobile devices.

Third, the digital-tool governance should incorporate well-being protections. Policies should implement meeting-free periods, i.e., every two days there should be a day dominated to work on the so-called focusing days, and video-call times should be restricted. Mindfulness exercises and micro-breaks can be initiated with the help of automated reminders. Leaders should be able to intervene in advance by monitoring the patterns of usage in the system through the analytics dashboards to ensure that users are not spending too much time in front of the screen or are not experiencing notification overload.

Fourth, the organizational leaders ought to design a participatory performance monitoring approach. When E-leaders engage the team on the selection of KPIs, thresholds and alert conditions, they can change attitudes towards surveillance towards solving problems together. Aggregated reporting, which is focused on group-based trends rather than individual performance indicators, makes teams even stronger and less anxious. In the cases when the personal surveillance is absolutely unavoidable, transparent and accurate information regarding the usage and right to access data allow building confidence.

Fifth, in order to realize grassroots innovation, leaders are advised to fund autonomic micro-teams, which have the freedom to test-drive new IoT uses. Such pods are to be awarded with small scale budgets, sandbox environments, and senior e-leader mentorship. Case studies of successful pilots may be presented in virtual forums to trigger the wider implementation and the creation of an experimentation culture.

Practitioner level also demands strategies of the day. E-leaders ought to develop cadences in which synchronous and asynchronous elements combine strategic meetings with update channels. Organized video team meetings where roles are clearly marked and facilitation changes keep the participants interested and increase cognitive load sharing. Contextful chat updates are short, instead of avoiding meeting creep, they embrace work rhythms. Automated badges can be as helpful as supplemental tactile recognition, e.g., personalized video shout-outs, digital thank-you notes. The practitioners are also advised to organize informal, but repeated, virtual meetings, coffee chats or peer coaching circles to maintain social capital.

Further, the practitioners must promote adoption of tools by offering just in time assistance: in-platform hints, live issue resolution co-working sessions, and peer mentees. In implementing new features, pilot cohorts give a leader opportunities to receive feedback and co-design user interfaces to focus on both customization and usability. Lastly, change management methods should be exercised diligently by the e-leaders, the stakeholder analysis, pilot demonstrations, continuous feedback loops should be used, to anticipate the resistance and ensure buying in on different hierarchies and cultures.

6.4 Policy & Training Implications

Functions that include human resources, learning and development, and executive leadership are crucial in bringing about institution of the identified practices. HR policies are to appreciate e-leadership competencies in performance appraisals and promotion requirements and take a clear reward of digital savviness, communication flexibility, and well-being stewardship. The leadership job description should incorporate the use of IoT platform, virtual team facilitating and data security practices.

L&D departments should also work with the subject-matter experts to co-design blended learning pathways that combine hard technical units, soft-skills labs, and scenarios and simulations. The results of the training must be evaluated both via knowledge tests and by behavioral indicators (decreasing the scores of notification fatigue or increasing the team engagement measures). Feedback systems should help mirror the experiences of learners so that curriculum material and delivery could be iterated continuously.

Leadership e-learning development will have executive sponsorship so that time, budget and tools will be dedicated to training programs. The topmost leaders need to be exemplary in their role by observing meeting-free periods, being involved in pilot projects as well as rewarding the practitioners who set a good example in making electronic leadership effective. Through the integration of e-leadership competencies in organization values and forms of governance, institutions can facilitate a culture, which will balance the approaches to technological novelty with humanistic stewardship.

6.5 Study Limitations

This study has some general limitations that reduce the applicability. The selected sample included e-leaders and team members whose work was mostly based on temperate arable farming

environments that had particular IoT frameworks; the results when applied to other farming industries, climatic conditions, and digital ecosystems may not be entirely applicable. Self-reporting measures causes some form of a bias such as social desirability and inaccurate reporting of recollection and especially when it comes to evaluating emotional intelligence and the way one feels engaged to the task. In spite of the triangulation of interviews and log analysis of the surveys, real-time ethnography could provide more information about leadership actions in the moment and the emergence of spontaneous team performance.

Depending on the organizational contexts, these factors (the existence of supporting IT departments or certain organizational cultures) could have played a role in determining whether organizations embraced technology at a higher adoption rate or exercise leadership in specific ways. An additional factor that may determine engagement patterns and stress levels is seasonality effects (planting versus harvesting seasons) but was not balanced among participants. Besides, fast development of IoT hardware and software implies that even findings regarding specific tools (e.g., platform usability pitfalls) might be obsolete in the nearest future. Lastly, the study does not assume causality, only a cross-sectional type of study was employed; longitudinal study or experiment would be necessary to prove the direction of relationships between e-leadership behaviors, and team outcomes.

6.6 Future Research Directions.

Based on the current study, the following avenues can be used in future research. A longitudinal study that could trace e-leadership in practice through complete seasonal seasons would help to reveal not only the patterns in developing leadership skills and shaping team dynamics in line with frequent agricultural phenomena and technology changes and variable market requirements. These designs would be able to isolate cause paths between digital-presence management tactics and prevention of burnout and habit durability.

The boundary conditions of cultural intelligence as a leadership requirement may be tested through cross-cultural comparisons across the farming communities in different geographic discretion of the world. E-leaderships that the scholars might develop could be based on the analysis of changes in local culture and norms, language barriers, and regulatory regimes, as well as differences in business processes and environment. Case studies in specific sectors, say horticulture, livestock management, or aquaculture, would be conducted to understand the level of transfer of frameworks

thus developed and establish specifics of leadership with reference to sectors and devise solutions to problems.

New technologies provide further research in frontiers. Research at the intersection of artificial intelligence, machine-learning based decision support and e-leadership may examine the process by which algorithm-made suggestions impact how leaders judge, levels of team independence and trust. Remote field tour through virtual reality, augmented reality interfaces is a research area that requires investigation into immersive leadership effect on empathy, participation, and mental load. Research on blockchain driven data governance models could evaluate the influence they have on trustbuilding and ideas of being followed.

Qualitative narratives coupled with sensor-enabled behavioral information could be better understood by way of mixed-methods designs. Evidence-based guidelines on the configuration of tools would be provided by experimental interventions that would test various notification algorithms, the frequency of meeting-free scheduling, or recognition modalities. Lastly, studies regarding interactions between e-leadership and environmental sustainability indicators, i.e., resource consumption efficiency and biodiversity performance, may link leadership activities to grand ecological and social objectives.

6.7 Final Concluding Remarks

With the agricultural sector being transformed to the digital realm, e-leadership is becoming an ultimate driver of progress, productivity, and human well-being. This paper has established that screen-based leadership is paradigm challenging and involves more than digital expertise, it involves a seamless merging of digital savviness, emotional intelligence, strategic insights and servant-based governance. Adjusting the balance between transformational inspiration and transactional rigor, nurturing cultural intelligence, and being sensitive to the rhythms of well-being, e-leaders will be able to lead remote teams in the stormy waters of IoT-transformation powered work.

Going forward, the hybrid and full remote work model, which was a fringe in the field of farming, is becoming the new norm in research, advisory services, and in coordinating various seeds supply chains. The ideals that are outlined here are not confined to ground operations and sensor networks, but rather areas covered in distributed stakeholders working across a digital platform. Leadership paradigm under the dynamics of technologies requires the embrace of adaptive leadership,

participatory data practice, and temporal designing of the interaction between humans and technologies.

Finally, the future of e-leadership is in the ability to strike a balance between the machine-based perceptions and human values. When leaders combine two roles technical and empathetic, they work as creators of data ecosystems and nurturers of team well-being, they unleash the potential of the digitalisation of agriculture. The institutions can encourage their e-leaders who will not only lead to productivity and sustainability, but also to inspiring engaged and motivated communities that are ready to face the challenges and opportunities of an ever-increasingly interconnected world, by integrating continuous, participatory design and resilience into organizational DNA.

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