



Leadership Effectiveness in the Era of Artificial Intelligence and Hybrid Work Environments

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DOI: 10.47760/cognizance.2026.v06i02.016

Abstract: The rapid growth of artificial intelligence (AI) and the extensive use of hybrid work changed the current workplace in various aspects. It has also changed how leaders lead as well as how their work is reviewed. The old leadership models that were geared towards individuals reporting to the same place to work with one another may not be effective now. Remote working, working with digital technologies, and decision-making with the assistance of AI are such new workplaces. The paper evaluates the performance of leaders who operate in an AI-powered compound workplace. It is worried about the shift in the style of leadership to accommodate the spread-out team, which heavily pioneers technologies and possesses both human and artificial components. The article is based on the notions of leadership theory, digital leadership studies, and socio-technical concepts. It utilises a mixed-method research design. The categories of variables that we will collect quantitative data on will include the leadership styles, level of AI utilization, level of individual communication, and group performance according to a survey. The data will be received on a qualitative level, in the form of interviews with the leaders and the employees who will work within the hybrid environment. We expect the results to prove that AI-assisted hybrid settings with the use of adaptive, transformational, and servant leadership styles are more effective. This is especially the case when these leaders are not just good with the use of digital tools, but also ethics savvy and possessing outstanding emotional intelligence. By this union of the two types of data, the study has a positive impact on the theory of leadership because it shows the portrait of good leaders in AI-based hybrid working systems. It also provides some practical advice to companies that have an interest in developing work leaders for the future.

Keywords: Leadership performance, Artificial intelligence, Hybrid employment, Digital leadership, Mixed methods, Human-AI co-operation

1. Introduction

Our working style has highly evolved over the past decade. The primary reason is due to new digital tools and events taking place globally that have resulted in a common remote and hybrid work. Artificial intelligence (AI) is now a part of the decision-making practice, automation of actions, communication, and performance checking in companies (Ochoa, 2025). Moreover, workers collaborate in various locations through online platforms. Not only have these changes transformed the way work is getting done, but they have also transformed the way leadership is practiced and assessed. Therefore, we cannot simply consider the success of leaders in this new setting with the traditional concepts of management in-person.

The hybrid job that combines working remotely and working in the offices comes with its own leadership issues. As an example, leaders get to meet the team less frequently, communication patterns shift, and individuals increasingly use technology to communicate (Kirjalainen, 2022). Meanwhile, the AI tools have become useful or even automated in management functions such as work assignment, performance review, and strategy analysis. It implies that, leaders have to be challenged with a complex collaboration between human judgment, AI recommendations, and the digital teamwork.

That from which we have good ideas is the current leadership theories such as transformational, transactional and servant leadership. These theories, however, were primarily based on the days when it was common to have teams working together in a single location, and technology was not a key component of the job (Fascinari and English, 2025). As AI is increasingly a part of the management process, we must pose the question: in what way does leadership change when AI systems are shared in the decision-making process and when individuals engage in communication using digital technology.

Although the topic of AI and future of work attracts the attention of numerous researchers, the literature review on the subject lacks studies on the topic of leadership performance in terms of hybrid work environments applying AI (Ashurbayev, 2025). Majority of literature dwells in the adoption of new technology or only on remote work, without a due combination of the leadership elements of the two. It is a large one since leadership is central to establishing the trust, engagement, and performance of employees, as well as their embrace of AI tools.

To address this gap, our paper considers how leadership styles evolve and influence success at work in distant, technology-intensive, and artificial intelligence-enabled workplaces. Our research method is a mixed method. It implies blending both quantitative and qualitative data research on leadership styles and team outcomes with the experience of real individuals who work in a hybrid environment and report on both leaders and employees (Ashurbayev, 2025). The key objective here is to develop a thorough idea of what works in today's AI-enhanced and hybrid workplace conditions in terms of leadership.

In this regard, the research questions in this study are as follows:

1. What are the most effective leadership styles in hybrid work environments that would be enabled through AI?
2. What is the impact of AI applications in managerial and operational tasks on the leadership behaviors and the decision-making process?
3. What are the expectations of the employees regarding the effectiveness of leadership in remote and AI-assisted teams?
4. Which leadership skills are essential to maintaining performance, trust, and engagement in the hybrid work environments?

This paper provides the answer to these questions and this is beneficial to information systems and leadership literature. It analyses the effectiveness of leadership in the current working environments, especially when AI and hybrid work revolutionized them. The findings will also assist the organisations to determine the leadership competencies necessary to manage future employees.

2. Literature Review

2.1 Leadership Theories and Leadership Effectiveness

The common theories have traditionally been used to understand the effectiveness of our leaders. Such are transformational, transactional, servant, and situational leadership. Transformational leadership is vision-centered, inspirational, and oriented on new ideas and an approach to every individual as a person (Yost, 2024). This style has usually been linked with the organization being better, the employees being highly engaged, and being more innovative. Transactional leadership on the other hand is focused on strict supervision, checking performance, and rewarding good work. This renders it to be suitable to the stable and controlled working places.

Servant leadership prioritizes the well-being of the employees, ethical behavior, as well as empowering them. It views leaders as assistants other than bosses. According to situational leadership theory, effective leadership is based on the ability of a leader to make new adjustments in their behavior to suit the competency and commitment levels of their followers (Shukla and Malhotra, n.d.). These theories have not lost their importance. Nonetheless, individuals have claimed that they are not as effective in digital and AI-assisted working locations because they were raised in the outdated, face-to-face workforce.

The more recent studies indicate that a leader gains more and more dependency on the ability to be flexible, cognizant about emotions, and aware of technology (Avrillia et al., 2025). Leaders must now learn to deal not only with people, but also with complex digital systems, which of course facilitate communication and performance reviews and team work. It is a shift which

makes us reclaim the definition of an apt leader who is not necessarily the top-down and face-to-face leader anymore.

2.2 Hybrid Work Environments and Leadership Challenges

Hybrid arrangements are a combination of work-at-home and work-in-the-office arrangements. This is flexible and yet comes up with issues of teamwork, talking, trust, and company culture. When individuals are distant, they do not have enough time to engage in casual conversation. This complicates the ability of the leaders to monitor work, provide assistance and develop unity among the team (Soleymani & Kouhpayeh, 2023). Therefore, successful leadership in hybrid environments actually consists of effective communication, result-oriented management and trust.

Studies about directional remote teams indicate that it is quite crucial to have clear objectives, frequent response, and all-inclusive communication strategies. Leaders of hybrid environments should strike the right balance between a free hand and responsibility on the staff (Soleymani and Kouhpayeh, 2023). They should also ensure that workers in the remote locations do not feel isolated or neglected in career opportunities. The success of leaders in such circumstances is determined by their ability to utilize the advantages of digital tools and at the same time engage their team members.

Hybrid work has a different impact on performance evaluation. It leaves behind the number of hours spent in the workplace in favor of what individuals accomplish. This implies that leaders have to redefine the concept of productivity and effectiveness. Thus, leadership approaches that aim to empower employees, establish trust and provide a secure emotional environment can now be regarded as more appropriate in hybrid working environments.

2.3 Artificial Intelligence in Leadership and Managerial Work

The use of artificial intelligence (AI) is currently an essential component of the functioning of contemporary enterprises. It assists in most activities, including data analysis, outcomes predictions, performance monitoring, hiring and decision-making. The use of AI systems to assist managers to come up with decisions is becoming more frequent, and they complement human judgment rather than eliminate it (De la Cruz et al., 2023). This collaboration between human and AI transforms the leadership roles as the work of thinking is shared between individuals and artificial intelligence.

Artificial intelligence can help to make things more efficient and just. Nonetheless, there is also a concern relevant to the use of AI as it may also relate to the clarity, fairness, ethical responsibility of AI, or trust of the employees toward such technology. The importance of leaders in the perceptions of employees regarding AI is high (Nurhidayah and Muliansyah, 2024). They do it by describing its application, making sure that it is applied in a moral manner, and maintaining control by humans. Therefore, to be good leaders in the workplaces that apply AI, they should

not have exclusive technical skills, but must possess the moral conscience and effective communication skills.

Research indicates that workers are more ready to believe in AI assisting with management when the leaders are transparent, clarify the decisions that were taken with the aid of AI, and position AI as a beneficial device instead of a dominating element. This brings out the changing role of the leaders. They are emerging to be the ones that give explanations and defend AI in their institutions.

2.4 Digital and Adaptive Leadership in AI-Driven Contexts

Digital leadership is currently understood as an option of integrating the so-called standard leadership competencies with digital competencies, flexibility and novelty. Online leaders must be familiar with technology, promote collaboration within a team, and facilitate continuous learning (Reeder, 2024). Digital leadership is also similar to adaptive leadership in the context of mixed environments, which utilize AI. This leadership approach is based on responding to change, experimenting, and learning.

Adaptive leaders understand that there is always the aspect of uncertainty when AI is being utilized in the workplace. They also motivate the teams to collaborate in order to deal with complicated situations (Kader & Hoshki, 2025). Such leaders tend to grant more power to the employees, assist them in acquiring new abilities, and provide secure areas where individuals and AI can collaborate effectively.

There are growing indications that to become effective leaders in the hybrid workplace with AI, leaders need a combination of data and technology driven and people-focus leadership values (Reeder, 2024). Nevertheless, little studies have been conducted so far that can directly relate specific leadership styles to achievements in such settings. This indicates that more diversified methods of research are required.

3. Research Model and Hypotheses Development

3.1 Conceptual Framework

This paper presents a paradigm of analysis. It applies concepts of the leadership theory, the literature of digital leadership, and socio-technical perspectives. The model postulates that there is a relationship between the different models of leadership styles and the effectiveness of the leader in a hybrid work environment where AI is utilized.

In some outcomes, we gauge effectiveness of leadership. These are team performance, levels of involvement of employees, the level of trust and the perception that people have about quality of leadership. Another hypothesis put forward by the model includes that the connection between leadership styles and effectiveness may depend on the magnitude of AI adoption and the degree of hybrid working. Moreover, it is believed that good communication and trust of the employees

are one of the major factors. They assist in explicating the linkages that exist between the leadership behaviors and good outcomes in digital working conditions.

3.2 Hypotheses Development

Transformational leadership is associated with more improved and innovative involvement, particularly at the changing and uncertain circumstances. Transformational leaders in hybrid workplaces based on AI will most likely view AI as a means of contributing to the increase. They will also promote proactive adaptation by the employees.

H1: Leadership effectiveness has a positive relationship with transformational leadership in AI-enhanced hybrid work environments.

Transactional leadership assumes monitoring and control systems, which do not work well in remote and AI-mediated settings in which direct supervision is minimal.

H2: Transactional leadership does not have a stronger correlation with leadership efficacy in AI-based hybrid workplaces than transformational leadership.

Trust, empowerment, and ethical responsibility are part of servant leadership and are imperative in the setting where AI application can lead people to think about surveillance, as well as equity.

H3: The relationship between leadership and employee trust and perceived leadership effectiveness are positive between AI-assisted hybrid teams and servant leadership.

With digital competence being high, leaders are in a better position to receive AI tools and convey their purpose to the staff.

H4: Leader digital competence has a positive moderating effect on the relationship existing between style and leadership effectiveness.

The adoption of AI in decision-making could change the leadership practices as the leaders can be less focused on basing their judgment on intuition and make their decisions based on the facts.

H5: AI application in managerial decision-making is a mediating factor between the leadership style and team performance.

4. Methodology

4.1 Research Design

The research design used in this study is a mixed-methods research design. It is a hybrid of quantitative and qualitative methods. This assists us to appreciate all about the functioning of leadership in hybrid work environments that apply AI. We have employed convergent parallel design. This implies that we gathered both qualitative and quantitative data simultaneously. Then, we examined data of each type individually. At last, we united them at the interpretation stage.

This approach is beneficial to the study in two respects. First, it allows us to discover quantifiable relations between various leadership styles and their outcomes. Second, it enables us

to learn more about the specifics of the experience of leaders and employees as they operate in AI-assisted hybrid environments.

4.2 Quantitative Phase

4.2.1 Sample and Data Collection

For the quantitative part, we surveyed employees and managers from organizations that use AI tools and have hybrid work setups. These participants came from various sectors such as technology, finance, healthcare and professional services.

We used stratified sampling to ensure we included managers and non-managers. We collected data using an online questionnaire that we distributed via professional network and contacts in organizations.

4.2.2 Measures

- Leadership styles: This is measured by validated scales measuring transformational, transactional and servant leadership.
- AI usage: Measured by items on the amount of use of AI for decision support, performance monitoring and communication.
- Leadership effectiveness: Measured by scales of employee rating of leadership effectiveness, team performance, and engagement.
- Measured as digital competence in the form of self-reported leader digital skills, and confidence for use of AI tools.

The responses are recorded on the basis of a five-point Likert scale.

4.2.3 Data Analysis

Statistical software is used to analyze the quantitative data. We test the hypotheses with the use of descriptive statistics, correlation analysis, and multiple regression analysis. We also conduct analyses of mediation and moderation to examine the role that AI usage and digital competence play.

4.3 Qualitative Phase

4.3.1 Data Collection

The qualitative part consists of interviews with semi-structured interviews. These interviews will be with a specific group of leadership and employees. These types of people are working in hybrid environments that use AI. The interviews will look into their experiences with leadership, how AI is used, communication, trust, and also how effective things are.

4.3.2 Data Analysis

The interview data is analyzed using the approach of thematic analysis. We code the transcripts multiple times in an attempt to find patterns associated with leadership adaptation, working in collaboration with people and with AI, and problems with hybrid work. These qualitative results then help explain and elaborate upon the quantitative results.

5. Results

This section presents the results of the analysis from the mixed-methods approach. In the first place the quantitative results are presented. Then, the qualitative findings are discussed. Finally, the section leads to a gathering of both sets of data. This combined interpretation aids in understanding what makes leadership effective in AI enabled hybrid work environments.

5.1 Quantitative Results

5.1.1 Descriptive Statistics

And then after data cleaning we were left with analyzing 312 valid survey responses. These respondents comprised of managers (32%) and non-managerial employees (68%). All of them worked in hybrid environments, which had varying degrees of AI integration. Descriptive statistics for notable study variables can be found in Table 1.

Table 1: Descriptive Statistics of Study Variables (N = 312)

Variable	Mean	SD	Min	Max
Transformational Leadership	3.89	0.62	1.75	5.00
Transactional Leadership	3.21	0.71	1.40	4.80
Servant Leadership	3.94	0.58	2.10	5.00
AI Usage in Management	3.47	0.69	1.50	5.00
Leader Digital Competence	3.76	0.64	2.00	5.00
Leadership Effectiveness	3.88	0.61	2.05	5.00
Employee Trust	3.91	0.59	2.20	5.00
Team Performance	3.83	0.63	2.10	5.00

Transformational and servant leadership styles tended to have a higher average score than transactional leadership. People gave leadership effectiveness, trust, and team performance ratings of moderately high. This implies that leadership in environments with AI is, in many cases, viewed in a positive light.

5.1.2 Correlation Analysis

The Pearson correlation test was used to find out relationships between important variables. Results are shown in Table 2.

Table 2: Correlation Matrix

Variable	TL	TSL	SL	AIU	LDC	LE
Transformational Leadership (TL)	1					
Transactional Leadership (TSL)	0.28**	1				
Servant Leadership (SL)	0.61**	0.24**	1			
AI Usage (AIU)	0.34**	0.19*	0.38**	1		
Leader Digital Competence (LDC)	0.49**	0.21*	0.52**	0.46**	1	
Leadership Effectiveness (LE)	0.63**	0.29**	0.68**	0.41**	0.57**	1

- $p < 0.05$, $p < 0.01$

Transformational ($r = 0.63$) and servant ($r = 0.68$) styles of leadership were more effective in leadership. This contributes to the notion that relationship-oriented leadership styles and change are more effective in mixed environments that are marked by the use of AI.

5.1.3 Hypotheses Testing

To test the hypotheses, we applied the multiple regression analysis. The dependent variable was the leadership effectiveness.

Table 3: Regression Analysis Predicting Leadership Effectiveness

Predictor	β	SE	t	p
Transformational Leadership	0.34	0.05	6.80	<0.001
Transactional Leadership	0.11	0.04	2.52	0.012
Servant Leadership	0.39	0.05	7.82	<0.001
AI Usage	0.18	0.04	4.21	<0.001
Leader Digital Competence	0.26	0.05	5.19	<0.001

$R^2 = 0.58$

Our model offered an explanation for 58 percent of the variance in the effectiveness of leadership. We have discovered that the best predictors were transformational leadership ($= 0.34$, $p = 0.001$) and servant leadership ($= 0.39$, $p = 0.001$), which confirms our hypotheses H1 and H3. H2 is also supported to some extent as transactional leadership was statistically significantly related, though with a weak relationship.

5.1.4 Mediation and Moderation Effects

Mediation analysis revealed that decision-making aided by AI partly explained the relationship between transformational leadership and the performance of teams. This supported hypothesis H5. Also, moderation analysis showed that the relationship between leadership styles and leadership effectiveness was strengthened by digital competence of a leader, which supported hypothesis H4.

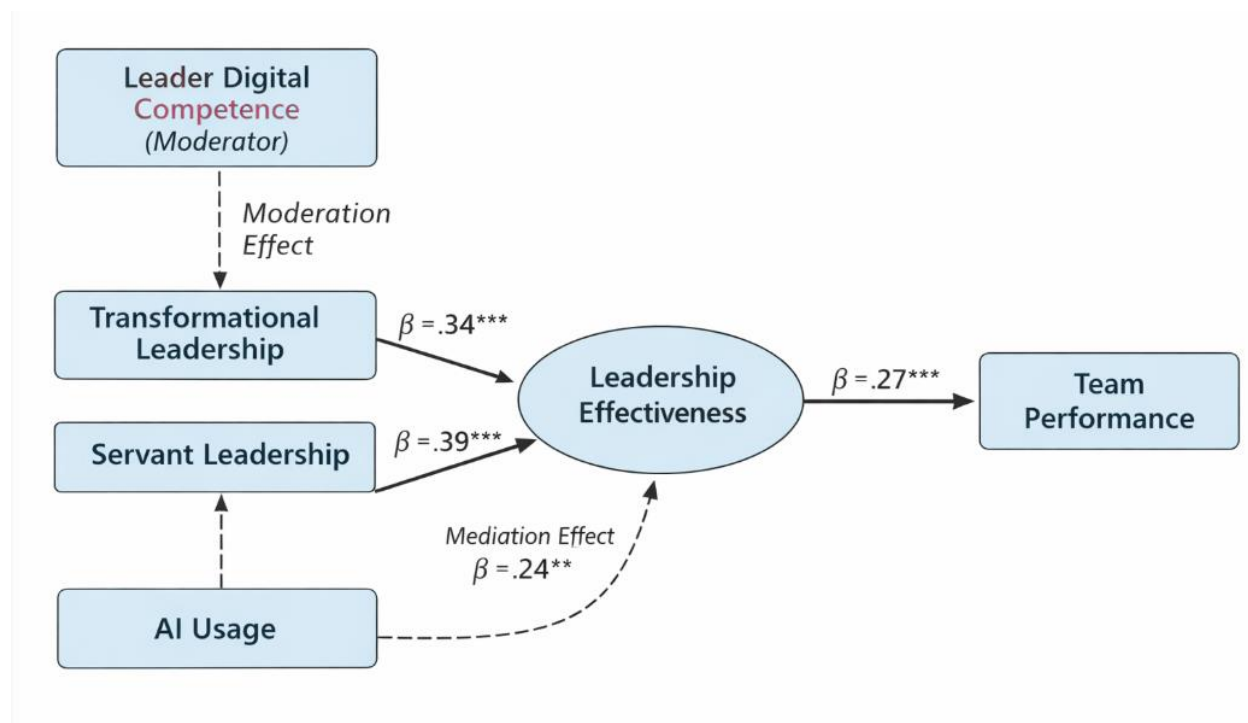


Figure 1: Conceptual Model with Standardized Path Coefficients

5.2 Qualitative Results

The qualitative section of this research was to have an in-depth appreciation of the functioning of leadership in AI-based hybrid workplaces. We held semi-structured interviews with 28 individuals. These comprised leaders as well as employees. This assisted in getting alternative opinions on the effectiveness of a leader, the application of AI, and the functioning of a hybrid employee. Several major themes were determined after attempting to analyze the interview data. These themes demonstrate the change of leadership styles in those workplaces that depend on technology and remote working.

5.2.1 Leadership as Sense-Making in AI-Assisted Work

One of the major concepts of the interviews was the way leaders are evolving their positions. They are turning out to be sense-makers in AI-using workplaces. According to the study, it is typical to hear people say that nowadays, good leaders do not simply make choices. Rather, they decode the information that AI delivers. The AI systems were considered to be effective in processing data and assisting in their effective work. People, however, realised that such systems cannot form context and make ethical decisions.

Therefore, leaders had to convert AI outcomes into decisions that would align with the organizational values and human needs. This interpreting task was critical to creating trust in the employees and ensuring the responsible application of AI. It was described by one participant of the research in the following manner: AI provides the numbers, the leader provides the meaning. In the absence of that, others do not have confidence in the system. This indicates that human judgment is paramount to AI tools. It also points out that the interpretation of things by the leaders is an important skill in workplaces that incorporate AI.

5.2.2 Trust and Transparency in Hybrid Teams

Good leadership in hybrid working entailed trust and transparency. According to the employees, concerns with the lack of knowledge on how AI was applied, particularly in performance check and decision-making processes, could be frightening and yield resistance unless handled effectively. The leaders who have elaborated on the functionality of AI tools and the type of information they have collected, and the use of such results, appeared more credible and more realistic.

Open communication was highly necessary to ensure AI did not become an option for watching employees. Citizens said that it was less worrisome when it is clear what AI could and couldn't know, and also makes relationships between leaders and employees stronger. It was said by one of the people that, as soon as our manager clarified what the AI is monitoring and what it is not, the fear was gone. This demonstrates that openness, ethical communication, and cautiousness, when it comes to employees perceiving AI tools, in fact make a good leader in the hybrid setting.

5.2.3 Shift from Control to Empowerment

One of the key themes portrayed a fundamental shift in the type of leaders in action, whereby they were now managing more by empowerment rather than control. The leaders knew that a hybrid mode of work implied that they could not as easily observe people in person and even supervise them physically. Due to this, some of them claimed to have begun to employ a result-based management style which emphasized trust, independence, and accountability.

This change was referred to as transformative by those concerned. It indicated that leaders were forced to concentrate more on specific objectives, performance outcomes, and employee assistance rather than constantly monitoring them. One disseminator of it said it with simplicity:

You can no longer see people. You must trust them--and that makes it different how you lead. This action demonstrates that hybrid working environments require management approaches to cherish empowerment and self-control. This justifies the thoughts that the transformational and servant leadership styles are effective, as observed in the quantitative findings.

5.2.4 Digital Competence as Leadership Legitimacy

The digital competence was regarded by many to be a primary area where leaders could be legitimate in hybrid workplaces with the use of AI. Respondents stated that digital-illiterate and AI-systems-illiterate leaders found it difficult to gain trust. This was particularly so when the teams relied extensively on technology in their day-to-day operations. Good leaders of technology, on the flip side, appeared to be more effective in offering advice, problem-solving, and smart decision-making.

Employees emphasized that digital competence went beyond technical competence. It also involved the capability of communicating clearly on technology and the meaning of technology. One of the participants pointed out that, when the leader fails to familiarize himself or herself with the tools that we are working on every day, it becomes difficult to follow them. This concept justifies the results of the quantitative study on the effects of the digital competence of the leader in diverse ways. It also stresses the significance of this skill so that leaders can perform successfully in the modern workplace environment.

5.3 Integration of Quantitative and Qualitative Findings

The quantitative results were corroborated by the qualitative ones. They described the reason why transformational and servant leadership styles were more effective in hybrid work settings with AI. The statistics of survey data showed strong correlations, but the interview data depicted the trends of how leaders became effective. It included establishing trust, putting AI in ethical perspectives and adaptive communication.

The role of AI use was also identified through qualitative insights. Leaders were actively involved in the way the employees perceived AI systems. Equally, the moderating influence of digital competence was realized in the interviews. These stories touched on credibility, confidence and leadership authority.

On the whole, the aggregate results indicate that successful leadership in AI-based hybrid places are the result of the coordination of the style of leadership, digital proficiency, and ethical human-AI partnership.

6. Discussion

This paper sought to examine the level of leader effectiveness within AI-based hybrid work environments. It managed to do this by balancing the number-based and the descriptive information. The findings have a strong indication that successful leadership in the organizations of today depends on an aligned style of leadership, digital capabilities, as well as ethical utilization of AI devices. The following part will discuss these findings. It will relate them to what other studies say, to their model of the study, and what they imply about the leadership concepts in workplaces where there is a large use of technology.

6.1 Leadership Styles and Effectiveness in AI-Enabled Hybrid Work

The quantitative data indicate that transformational and servant leadership styles are the most effective to define the effectiveness of the leader in the AI-enabled hybrid workplaces. Such results are in accordance with previous leadership research. These academics relate relational, values-based leadership with improved employee engagement and performance particularly when the situation is unsure and dynamic.

Nonetheless, the current research contributes to the existing body of literature by examining such approaches to leadership in the work systems that operate based on AI and remote work. The qualitative findings serve to represent that transformational and servant leaders are not only productive due to motivating employees. They also actively engage in making people realize things, fostering trust, and using AI tools ethically. Employees perceived leaders to be competent in a situation when they explained to them the ways of interpreting and utilizing AI outputs. It implies that today, effective leadership implies the control of human as well as algorithmic information.

Transacting leadership was found to be statistically significant, although it was less connected to leadership effectiveness. It means the leadership styles that are forward-looking, control and reward-driven may not be effective in the environment where remote work is mandated, employees enjoy high freedom, and AI does a significant part of the monitoring. The results are aligned with the more recent studies that indicate that stringent approaches to supervision are not the most appropriate practices in the context of hybrid work.

6.2 The Role of AI as a Mediating Mechanism

The study is relevant in that it demonstrates the connection between the use of AI and team performance by identifying the leadership styles. In our quantitative study, the fact that the action of leaders results in some performance outcomes is partially due to the use of AI in the making of decisions. This connection was more adequately interpreted by qualitative findings. They demonstrated how leaders introduce AI either as a friendly companion or as a means of controlling things.

Leaders who viewed AI as an aid to make better human decisions, not to substitute them, had a stronger ability to maintain trust and engage. Nonetheless, employees were concerned and opposed when AI systems were introduced without providing sufficient clarification and ethical background. This is in line with the socio-technical systems theory that argues the effectiveness of technology is a matter of what people make of it, and how the executives influence the application of technology.

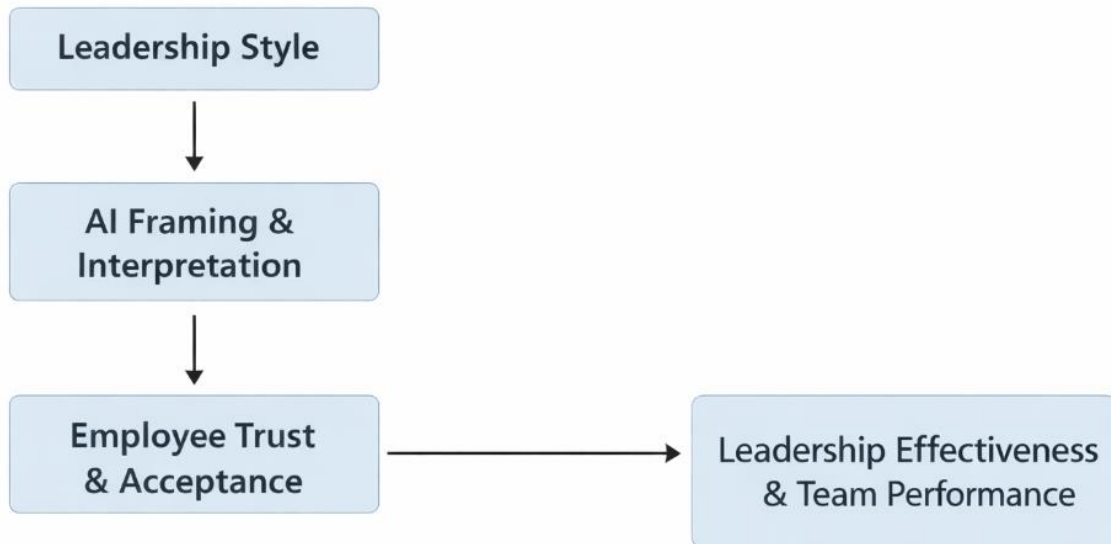


Figure 2: Leadership–AI Interaction Framework

6.3 Digital Competence as a Boundary Condition

The analysis of moderation revealed that digital competence of a leader strengthens the relationship between leadership style and leadership effectiveness. This finding was well supported with qualitative evidence. In this case, the ability to deal with digital tools properly made leaders look more legitimate. Those leaders unfamiliar with AI tools and online platforms appeared to be clueless as to actual workings. This diminished their authority and their plausibility.

This finding contributes to the academic on digital leadership. It empirically demonstrates that digital competence is a fundamental leadership competency within AI-enabled hybrid contexts, as opposed to an adjunct one. Notably, participants pointed to the fact that digital competence is

not necessarily related only to the technical knowledge but also to having the capacity to explain the boundaries, risks, and the ethical aspects of AI comprehensively.

6.4 Integrating Quantitative and Qualitative Findings

The integration of the two approaches can provide insight into the issue of effective leadership. This is superior compared with taking single approach. The data indicate that there are clear connections between leadership styles, AI usage as well as the use of AI and performance of the leaders. In the meantime, the qualitative information is useful in explaining the existence of these connections. Table 4 brings together the complements and explanations of qualitative themes to the quantitative findings.

Table 4: Integration of Quantitative and Qualitative Findings

Quantitative Result	Supporting Qualitative Theme	Interpretive Insight
Transformational leadership has a positive prediction on effectiveness.	Leadership as sense-making	Leaders give meaning to AI outputs and interpret them.
Trust and effectiveness are well predictors of servant leadership.	Trust and transparency	Ethical communication eliminates fear of AI.
The mediating role of AI between the leadership and performance relationship is there.	AI framing by leaders	The performance of AI relies on the mediation of leaders.
Online leadership is moderated by online capability.	Digital competence as legitimacy	Technical fluency helps in the credibility of the leader.
Weaker effects are exhibited by transactional leadership.	Shift from control to empowerment	Leadership that is based on monitoring is an outsider to hybrid work.

6.5 Leadership Effectiveness in Hybrid Work Contexts

Task hybridization alters the leadership processes. It minimizes physical control and makes more use of digital devices to communicate with one another. Studies indicate that effective management in this arrangement does not depend so much on the observation and management of employees. Rather, it concentrates more on trust, power, and result-oriented management to employees (Verma and Singh, 2022). Leaders who performed well in hybrid work claimed that they made a conscious effort to stop micromanaging. Instead, they preferred to encourage the independence of the employees.

The change is consistent with concepts of self-determination theory and the work on psychological safety. These concepts emphasize that motivation is fuelled by autonomy, the

feeling of ability and connections. This change can be facilitated using AI systems when the latter are used ethically. They are able to give thoughts on information without denying the freedom of employees. Nevertheless, it is important that leaders should control the application of these systems.

6.6 Implications for Leadership Theory

This evidence demonstrates that old leadership concepts require to be studied in hybrid systems that involve AI. It is no longer possible to observe the performance of leaders in a holistic manner rather than in relation to their interactions with people. Rather, it is a product of an energetic give and take among leaders, followers, and intelligent technologies. This paper facilitates the consideration of leadership differently as an exercise of human beings as well as technology. In this perspective, leaders become moral guides, bring out AI and assist in handling distributed work.

This study contributes to the emerging literature on digital and flexible leadership, linking leadership styles, application of AI and performance of hybrid work. It also preconditions the coming up of new theories in AI-using organizations.

7. Theoretical Implications

This study has several important theoretical contributions to the fields of leadership, organizational behaviour and information systems. It does this by extending traditional approaches to leadership by adding hybrid work environments with the utilization of AI. The research integrates various leadership styles, the use of AI and the dynamics of hybrid work into a single empirical framework. This allows us to try to better understand what makes leadership effective in the contemporary organization, particularly in light of the particular context.

7.1 Extending Leadership Theory to AI-Enabled Hybrid Contexts

First, these findings contribute to the theory of leadership. They indicate that traditional models, which don't take into account the context, are not able to explain fully how effective leaders are. Transformational and servant leadership theories remain strong. However, this study shows that their effectiveness rests on the effectiveness of leaders in working in environments where AI and digital tools are prevalent (Kim et al., 2025). Leadership isn't about influencing people person-by-person anymore. It increasingly means understanding and ethically influencing the information that AI generates.

This is an extension of the transformational leadership theory. Leaders are now viewed as not only as a person who creates visions and motivates others, but as a sense maker too. That is they turn what the algorithms produce into organization action that make sense and are fit with values (Joshi, 2025). In the same way, servant leadership theory is not just about caring for people. It

now incorporates looking after socio-technical systems. This pulls leaders to be responsible ethically for AI technologies that affect the employee experience and results.

7.2 Reconceptualizing Leadership as a Socio-Technical Process

Second, the present study contributes to the development of socio-technical systems theory. It does this by showing with evidence that leadership is a connection of the technological systems and human workers. The results show that AI on its own does not make one a better performer. Instead, it is how leaders behave that is useful (La Sala et al., 2024). These behaviors impact how employees trust, accept and understand AI tools.

The study found that the presentational and understanding of AI works as a mediating factor. This allows to redefine leadership as part of the human-AI interaction, and thus not only a social event. This new way of thinking is in opposition to the view that AI in organizations has a predetermined way out. It also supports views that highlight the role of leaders to influence what happens with technology.

7.3 Advancing Digital and Adaptive Leadership Theory

The findings are also useful to digital leadership theory. Through their evidence, they show that digital competence functions as a limit for the extent of effectiveness of leadership. Previous ideas perceived digital skills as an additional for leaders (Ibrahim et al., 2025). However, this study proves that being good with digital tools is key for leaders to be seen as legitimate and have influence in hybrid environments that use AI.

Additionally, the research stated that there was a transition from leaders controlling to leading teams. This is consistent with adaptive leadership theory. This theory proposes that for good leaders, they deal with ambiguity by being flexible, learning, and sharing responsibility (Terry, 2025). This study contributes to the field of adaptive leadership through hybrid work systems that utilise AI. In these systems, uncertainty arises not only from change in the market but also from decisions made by algorithms and technologies not always clear.

7.4 Integrating Leadership, Trust, and Technology Acceptance

The other theoretic lesson that can be learned is the relationship between the leadership theory and concepts related to technology acceptance and trust. The qualitative findings demonstrate that trust in the employees is a key factor that connects what leaders do and the level of technology acceptance in the hybrid workplaces. Open and ethical communication leaders contribute to more trust being established. This, respectively, increases the effectiveness of leadership and enhances the performance of a team (Mekheimer, 2025).

The research relates to the field of leadership and information systems in this work. It demonstrates that the technological acceptance is not merely a matter of personal thinking. Rather, it is influenced by the activities of the leadership. Thus the leadership theory must also

take into account the roles that leaders play in the way they affect the sense of fairness, openness to work environments that incorporate AI as well as control.

7.5 Toward a Contextualized Theory of Leadership Effectiveness

The work is beneficial to the greater leadership arena because it supports a viewpoint of effective leadership based on particular circumstances. The findings indicate that a combination between the style of leadership, technology and structure of companies all contribute to good leadership. It is not merely regarding the personal traits and behaviors of a leader. The use of artificial intelligence and hybrid work arrangements completely alter the nature of leadership occurrence (Adamson, 2025). This implies that researchers must go beyond the outdated models of leadership which do not alter.

This study forms a foundation of new theories by incorporating AI application, digital skills, and hybrid employment in the leadership theory. Such novel theories will be more indicative of the true nature of the digital and AI-based workplace.

8. Practical Implications

The findings of this study are significant to organizational leaders, human resource professionals, policy makers and organizations. They can use this information to enhance leadership in hybrid work environments that make use of AI. AI and hybrid working is now prevalent in modern organizations. Therefore, leadership approaches must change. This will help them cope with technology and people related problems.

8.1 Implications for Organizational Leaders

Leaders in hybrid work environments that make use of AI need to make a change in their manner of leadership. They should leave behind old supervisory roles, instead focus on getting people to understand things, gaining trust and empowering their teams. Our findings show that transformational and servant leadership approaches works very good. This is particularly important if leaders take an active role in explaining to their employees what AI is doing and putting it into context (Tariq et al., 2024). This means that leaders should serve to interpret AI information, instead of using at face value what the algorithms are suggesting.

In all practical terms, leaders need to explain how AI tools help make decisions. They also need to be clear on what AI can't do. Most importantly, they need to ensure that human judgment continues to be a key for important results. If leaders fail to assume this role of interpreting AI, they will lose trust from their employees and encounter resistance to AI systems (Aydogan, 2025). To fix this, not only should we be trained on the technical on the job, but we should also be educated on ethical decision making, emotional intelligence, and communication skills.

8.2 Leadership Development and Training Programs

This study demonstrates that digital competence is an important leadership skill: it is not an optional one. Businesses should introduce AI knowledge and understanding data and digital ethics in their leadership training. This training needs to cover the way AI systems work. It must also address the way AI affects what the employees think, their independence, and fairness.

Leadership development programs should also prepare leaders to manage people who work both in person and remotely. This means having a focus on the management of performance by results, good communication strategies for remote working and leadership that includes everyone. Training with simulations and planning for varying situations can assist leaders in practicing in making decisions using AI. At the same time, they can learn to keep things clear and be responsible.

8.3 Human Resource Management Practices

From an HR perspective these findings demonstrate that we need to re think about how we measure our leaders and evaluate performance. Old ways of measuring things, which are based on seeing and a close watch over people, might not work so well in hybrid work settings. Instead, companies should start to assess leaders on their capacity to build trust, help people work together, and use AI in an ethical way in their work.

HR departments should also actively develop rules for the use of AI in management processes. This includes things such as monitoring performance and evaluating employees. Having clear rules about data privacy, about how algorithms are held accountable, as well as obtaining consent from employees can help to reduce fear and resistance. This also aids in supporting ethical leadership practices.

8.4 Managing Trust and Employee Acceptance of AI

Trust was found to be an important determinant of the performance quality of leaders and the acceptance of AI. Organizations should encourage leaders to have open conversations with employees about artificial intelligence tools. This includes talking about concerns around surveillance, bias and job security. Clear ways of communicating, such as telling employees how AI is used, creating feedback systems, and allowing employees to assist in decision-making processes, can help make employees more accepting and involved.

Leaders should also allow employees to be involved in the design and setup of AI systems if possible. These kinds of approaches not only make systems more straightforward to use but also develop an impression of ownership and trust (Tang et al., 2025). This helps to create better leadership results in mixed work settings.

8.5 Implications for Organizational Policy and Governance

At the organizational level, these findings indicate the need for governance frameworks. Such frameworks must strike such new technology with ethical responsibilities. Organizations should

develop structures of oversight. Examples include AI ethics committees or teams of different departments. These groups can help the leaders to make good decisions on AI.

Policies must make it clear what roles AI and human judgment will have in management (Michael & EGBIVWE, 2025). This makes sure the leaders are accountable for decisions affecting the employees. These forms of governance systems can help organizations leverage the benefits of AI. At the same time, they defend the health of employees and make leadership work.

8.6 Implications for Technology Designers and Vendors

The results provide valuable knowledge for some of those who develop and market AI management tools. AI systems should aid leaders to have a better understanding of situations and not completely take over this role from humans. Features to make AI more explainable, transparent and controllable can help leaders share AI-driven insights more effectively with their teams.

When technology providers ensure that the design of AI systems is paired with what leaders and organizations require, they can support more effective teamwork between humans and AI systems. This can also lead to better results in leadership in hybrid work situations.

9. Limitations and Future Research

This study offers valuable insights, but it also has some limitations that future research should address.

First, we used a cross-sectional design. This means we looked at things at one point in time, so we can't definitively say that one thing causes another. For instance, we can't fully establish cause-and-effect relationships between leadership styles, AI use, and leadership effectiveness. Future studies could use a longitudinal design, tracking these elements over time. This would help us see how leadership actions and employee views change as AI and hybrid work develop.

Second, the data came from self-reported measures. This can sometimes lead to common method bias or people answering in ways they think are socially acceptable. We did our best to be rigorous in collecting and analyzing data. However, future research could improve validity by using objective performance data, observations, or feedback from multiple sources, like peers and supervisors.

Third, our sample included various industries, but it might not have fully captured how AI adoption and leadership practices differ across specific sectors. For example, leadership in highly regulated fields like healthcare or public administration might be very different from that in tech-heavy industries. Future studies should explore industry-specific models to better understand how context affects leadership effectiveness.

Furthermore, this study focused on transformational, transactional, and servant leadership styles. However, other leadership approaches, such as ethical leadership, inclusive leadership, or shared

leadership, might also be important in hybrid environments that use AI. Future research could broaden the theoretical framework to see how these other styles interact with AI technologies and distributed work structures.

Finally, AI technologies are always changing. So, future research should look into new issues like algorithmic bias, explainable AI, and the long-term psychological impacts of AI-supported management on employees. Also, comparing studies across different cultures would provide useful insights into how leadership effectiveness in AI-enabled hybrid work environments differs around the world.

10. Conclusion

This paper was based on an analysis of leadership performance in an environment where artificial intelligence (AI) and hybrid work are prevalent. We employed a mixed method design. Our information gathering strategy was to collect the figures using surveys and then sum them up with the information gathered during the interviews. This assisted us in comprehending the transforming leadership in remote, tech and AI-assisted workplace.

We prove that transformational and servant leadership styles are the most appropriate ones in the hybrid environments involving the power of AI. Particularly, it was so when the leaders were good with technology and discussed AI tools openly and in an ethical way (de Principe, 2021). We discovered that a good leadership is not the sole aspect regarding how leaders affect others. In addition, it is also dependent on their capabilities to interpret AI outputs and establish trust and give employees autonomy to work under hybrid arrangements.

It is worth mentioning that AI does not make it a better leader or a better team, as a single unit. Rather, AI use by leaders defines its effects (Hmoud et al., 2025). Their behaviors determine how the employees feel and embrace AI. These results imply that we should consider leadership as a blend of the social and technical. As part of this conglomeration, human judgment, ethical responsibilities and technology are all tied together.

This investigation is incorporated in the knowledge of digital and adaptative leadership. It does so by transferring the concepts of leadership to the AI using hybrid workplaces. It is also quite helpful to some companies that deal with the future of work. With the introduction of AI and hybrid work continuing to change the nature of an organization, effective leadership will require the ability of a leader to integrate a new technology with human-centric values.

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