



Exploring the Influence of Leadership Communication on the Performance of Virtual Teams in the Digital Era

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ABSTRACT

In the context of rapid transformation of the business environment and the widespread of the remote work, virtual teams have become a defining element of modern organizations. This research investigates the impact of leadership communication on the performance of virtual teams. The study was conducted on a sample of 115 respondents working in virtual teams, using an online questionnaire. Data analysis was performed using SPSS software through linear regression tests. The findings show that leaders who communicate clearly, empathetically and use effectively the digital tools contribute to creating high performing teams. The paper offers practical recommendations for virtual team leaders regarding the development of communication skills and the implementation of strategies adapted to the digital environment, highlighting the critical role of leadership communication in current organizational success.

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1. Introduction

In today's work environment, virtual teams are becoming increasingly prevalent in the global business environment. By their nature, virtual teams operate in a digital space, which presents unique challenges and opportunities for leadership, communication, and task performing. Virtual teams depend on digital technologies to coordinate tasks, maintain interpersonal connections, and ensure alignment with organizational objectives. However, the success of these teams is determined both by access to digital infrastructure, and by the quality of leadership communication practices that guide team interactions (Batırlık et al., 2022).

The transition to digital and hybrid work models has revealed gaps in leadership communication strategies, highlighting the need for deeper understanding of how communication clarity, empathy, support, and openness to new technologies impact team outcomes. While previous studies have examined aspects of virtual teamwork, limited empirical research has explored the combined effect of these leadership communication variables on team performance in remote environments, particularly in the context of knowledge-intensive industries such as business process outsourcing (BPO).

This study addresses this gap by investigating how six leadership communication related factors (access to communication technology, leader communication clarity, leader digital support, leader empathy, digital communication reliability, and leader openness to new communication channels) influence the performance of virtual teams. The research is based on a sample of 115 employees of Romanian BPO industry and provides empirical evidence of role of leadership communication in virtual team effectiveness. By integrating findings from management, communication, and technology adoption literature, the paper contributes to both theory and practice, offering evidence-based recommendations for enhancing leadership communication in digitally mediated organizational environments.

The present paper is structured as follows. After the introduction, the next section presents the theoretical background of team performance, leadership communication and digital technologies, establishing the foundation for all six hypotheses of the conceptual model. The following section explains the methodology, including data collection process and the statistical method used. The results section presents the findings of the research, followed by a discussion section that contextualizes these findings within the broader literature. The research paper concludes with a summary of the theoretical contributions and practical implications, limitations and future research agenda.

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2. Theoretical background and hypothesis

Virtual teams' performance and leadership communication

Virtual teams are a key component of modern organizations, bringing together individuals who collaborate from different geographic locations, using technology to communicate and coordinate work (Yousef, 2024). These teams are characterized by their diversity in terms of cultural backgrounds, time zones, and work styles, as well as their reliance on digital tools for interaction and project management. In a globalized and technologically advanced business environment, virtual teams have become more important, and their impact on organizational performance is a topic of great interest.

For organizations, it is essential to find a balance between individual and team performance, as they are interdependent (Newman et al., 2020). While individual excellence is important, it is the combined effort and collaboration of team members that ultimately leads to organizational success. Managers must foster an environment that encourages both individual growth and teamwork, providing the support and resources necessary for employees to excel both independently and collectively (Brown et al., 2021). By understanding the nuances of individual versus team performance, organizations can optimize processes and leverage employee strengths to achieve sustainable and high-impact results.

Individual performance is often measured based on specific goals, targets, and performance indicators set for each employee. This involves assessing productivity, quality of work, and ability to meet deadlines. Team performance, on the other hand, is evaluated based on the collective results, cooperation, and effectiveness of the entire team (Feitosa et al., 2022). This includes factors such as team cohesion, problem-solving skills, and the ability to achieve common goals.

In the context of organizational performance, the dynamic between individual and team performance is important. While individual performance focuses on the achievements, skills, and contributions of a single employee, team performance emphasizes collaborative efforts, communication, and synergy within a group of individuals working toward a common goal (Putro, 2023). Both types of performance are essential to the success of an organization but require different management approaches and appraisal metrics.

Effective communication and collaboration are essential factors that influence the performance of virtual teams (Topaloglu and Anac, 2021; Shofiyah et al., 2023). To ensure successful results, team members must be able to communicate clearly, openly, and proactively. This involves using various communication channels, such as video conferencing, messaging, and email, to stay connected and informed (Dumitru, 2021). In addition, establishing regular team meetings and maintaining constant communication can create a sense of unity and provide opportunities for brainstorming and problem-solving.

Effective collaboration within virtual teams relies on setting clear goals and expectations, as well as assigning roles and responsibilities to each team member. Encouraging active participation and providing constructive feedback can also improve collaboration and create positive team dynamics (Presbitero, 2021). It is important to create an environment where team members feel comfortable sharing their ideas and opinions and where conflicts can be solved in a respectful and timely manner. Finally, by prioritizing effective communication and collaboration, virtual teams can maximize performance and achieve goals effectively. Monitoring the performance of virtual teams requires appropriate tools and technologies to track progress and identify problems (Kang and Park, 2023). Team leaders must provide constructive feedback and support to help members achieve their goals. In conclusion, virtual teams offer significant opportunities for improving organizational performance, but they require effective communication and team management.

Effective communication not only facilitates the dissemination of vital information but also cultivates an environment where team members are aligned with the organization's goals. Leaders who articulate clear goals and maintain open channels of communication create a sense of direction that is very important for team success. Studies emphasize that when leaders possess goal and process clarity, it positively influences the motivational mechanisms within a team and improves overall performance outcomes (Zhang et al., 2022; Fürstenberg et al., 2021).

Studies emphasized the role of leader's traits on team communication effectiveness. Empathy of the leader improved work behavior and outcomes (Ni et al., 2023) leading to better team performance (Simon et al., 2022).

Digital Technologies and Leadership Communication

In a constantly changing world, the integration of technology into leadership processes becomes crucial for achieving efficient and competitive results (Bartsch et al., 2021). Managers must identify and implement technologies that support operational efficiency, streamline communication and decision-making, and enhance employee productivity. By using appropriate technological tools and systems, repetitive processes can be automated, workflows can be managed more efficiently, and relevant data and reports can be obtained for strategic decision-making.

To ensure the successful integration of technology into leadership processes, effective management changes are essential, along with proper training of employees to adopt and successfully use new technologies (Afsar and Umrani, 2020)

Instant messaging systems are essential communication technologies within organizations, facilitating the rapid exchange of information between team members or employees from different departments or locations. These systems allow real-time message transmission, regardless of users' physical location, thus promoting efficient communication and rapid decision-making. Instant messaging platforms include functionalities like file sharing, audio or video calls, and the organization of discussion groups, improving collaboration and work efficiency (Tarofder et al., 2023).

Online collaboration platforms provide a virtual environment where employees can communicate, share documents and information, coordinate projects, and track their progress in real time (Swart et al., 2022). Videoconferencing systems allow virtual meetings between geographically distant employees (Suduc et al., 2023). These systems enable participants to communicate in real-time via audio and video, facilitating interaction and collaborative decision-making. They offer benefits such as saving travel time and costs and enabling quick and flexible meetings.

Relational databases are fundamental for efficient information management within an organization. They organize data in a tabular structure and use relationships to represent interconnections between different entities and attributes (Nambiar and Mundra, 2022). In fields like finance, healthcare, or education, relational databases are essential for managing and protecting data, ensuring its integrity and consistency.

Document management systems facilitate the organization and control of information efficiently and structurally. They allow centralized document management, storage, and access, promoting collaboration and communication between departments and work teams. These systems enable asynchronous communication and maintain transparency through edit tracking and access logs, thereby enhancing coordination and reducing information deficiencies in distributed teams (Swart et al., 2022). Cloud computing is a modern technology offering flexibility and scalability in data storage and management (Alblooshi et al., 2023). By accessing a distributed computing system through the Internet, companies can rapidly adjust resources according to their needs, benefiting from backup and data recovery solutions.

Automated reporting systems are essential for the rapid and efficient generation of structured reports. They collect, process, and analyze data, generating customized reports based on user needs and preferences (Ongena, et al., 2024). These systems support asynchronous collaboration and promote transparency and accountability in leadership communication.

Technology is a key tool in modern management practice, facilitating managers' work and contributing to organizational performance improvement (Al-Husban et al., 2021). Performance enhancement is one of the main objectives of technology use in the management environment. Technology provides tools like specialized software, online communication platforms, and performance monitoring systems, which facilitate decision-making processes and improve workflows within organizations.

Managers must possess strong technological competencies to perform their responsibilities efficiently (Mollah et al., 2025). Understanding information systems, data analysis and interpretation skills, and managing technological projects are essential for successfully implementing technology in organizations. This implies knowing how IT systems work and being familiar with the various technologies and applications used (Mahadevan and Steinmann, 2023).

Remote teams depend heavily on computer-mediated communication tools such as email, chat applications, and video calls. Each medium offers unique advantages and limitations. For example, text-based communication is efficient and asynchronous, but lacks nonverbal signals such as tone or facial expressions, increasing the risk of miscommunication and eroding trust. Studies show that teams relying solely on text communication are more likely to experience misunderstandings and lower levels of interpersonal trust (Liu et al., 2024). Consequently, selecting the appropriate communication tools and routines is essential for virtual team performance (Hartner-Tiefenthaler et al., 2022).

To improve communication outcomes, it is recommended for teams to use a combination of communication media (Grözinger et al., 2020). Integrating text, audio, and video platforms allows team members to select the most appropriate channel based on the complexity and sensitivity of the message (Reiter-Palmon et al., 2021).

Based on the literature review, a conceptual research model (Figure 1) was designed and consequently six hypotheses were formulated:

H1: The access to the communication technologies of the team members has a significant effect on team performance.

H2: Leader communication clarity has a significant effect on team performance.

H3: Leader digital support has a significant effect on team performance.

H4: Leader empathy has a significant effect on team performance.

H5: Digital communication reliability has a significant effect on team performance.

H6: Leader openness to new communication channels has a significant effect on team performance.

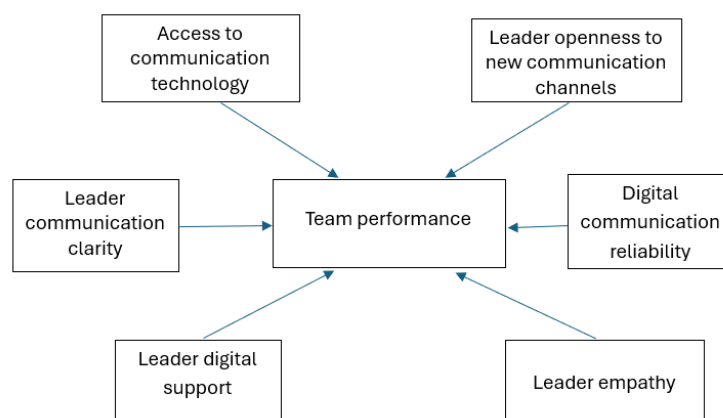


Figure 1. Conceptual research model

Source: authors

3. Research methodology

The hypotheses were tested using empirical data. For this purpose, a questionnaire was designed based on literature review and discussions with managers from BPO industry. The first section of the questionnaire included 12 items. It gathered the perceptions of the employees on leadership communication, team performance, communication technologies and leader features. All items were evaluated on a 5-point Likert scale (1 – strongly disagree; 2 – disagree; 3 – neutral; 4 – agree; 5 – strongly agree). The second section of the questionnaire gathered data for respondent profile based on gender, age, hierarchical level, education level and team size. The questionnaire had also an introductory cover letter outlining the confidentiality of the responses and the research aims.

The questionnaire was posted online via Google Forms. The invitation to complete was sent to employees from BPO industry. The research study was conducted during the period of November – December 2024. Participants formed a convenience sample of 115 employees from BPO industry from Romania, members of virtual teams. The data was proceeded by SPSS, version 22, based on regression analysis.

4. Results

The first hypothesis explores the existence of a causal relationship between team member's access to communication technology and team performance.

The correlation coefficient ($R=0.317$) shows a weak to moderate correlation between the predictor (access to communication technology) and the dependent variable (team performance). The coefficient of determination ($R^2=0.101$) shows that 10.1% of the variance of team performance is explained by the team member's access to communication technology (Table 1).

Table 1. Correlational model ratio for the hypothesis H1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.317 ^a	.101	.093	.541

a. Predictors: (Constant), Access to communication technology

Source: Output SPSS

The ANOVA test shows that the regression model is statistically significant ($p = 0.001$), indicating that the relationship between the predictor (access to communication technology) and the dependent variable (team performance) is unlikely to be due to chance (Table 2). This supports the validity of the model and suggests that the independent variable contributes meaningfully to explaining the variance in the outcome.

Table 2. ANOVA^a summary for H1

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.701	1	3.701	12.661	.001 ^b
	Residual	33.030	113	.292		
	Total	36.730	114			

a. Dependent Variable: Team performance.

b. Predictors: (Constant), Access to communication technology.

Source: Output SPSS

The regression model for the H1 is represented by the following equation:

$TP = 3.372 + 0.253 \cdot ACT$, where:

TP= team performance;

ACT= access to communication technology.

The values of the regression coefficients show that the team member's access to communication technology significantly contributes to the regression model ($\beta = 0.317$; $t = 3.558$; $p = 0.000$) and can be used to predict the dependent variable (team performance). For each additional unit of ACT, team performance is expected to increase by an average of 0.253 (Table 3).

Table 3. The correlation coefficients associated with the linear regression model for H1
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.372	.317		10.620	.000
	Access to communication technology	.253	.071	.317	3.558	.001

a. Dependent Variable: team performance.

Source: Output SPSS

Consequently, the first hypothesis is statistically supported, meaning that there is a significant relationship between team members' access to communication technology and team performance, and the linear regression model predicts the level of the team performance based on the level of access to communication technology.

The **second** hypothesis explores the existence of a causal relationship between leader communication clarity and team performance.

The correlation coefficient ($R = 0.323$) shows a weak to moderate correlation between the predictor (leader communication clarity) and the dependent variable (team performance). The coefficient of determination (0.104) shows that 10.4% of the variance of team performance is explained by the leader communication clarity (Table 4).

Table 4. Correlational model ratio for the hypothesis H2
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.323 ^a	.104	.096	.731

a. Predictors: (Constant), Leader communication clarity.

Source: Output SPSS

The ANOVA test shows that the regression model is statistically significant ($p = 0.000$), indicating that the relationship between the predictor (leader communication clarity) and the dependent variable (team performance) is unlikely to be due to chance (Table 5). This supports the validity of the model and suggests that the independent variable contributes meaningfully to explaining the variance in the outcome.

Table 5. ANOVA^a summary for H2
ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.031	1	7.031	13.162	.000 ^b
	Residual	60.361	113	.534		
	Total	67.391	114			

a. Dependent Variable: Team performance.

b. Predictors: (Constant), Leader communication clarity.

Source: Output SPSS

The regression model for the H2 is represented by the following equation:

$TP = 2.726 + 0.373 \cdot LCC$, unde:

TP= team performance;

LCC= leader communication clarity.

The values of the regression coefficients show that the leader communication clarity significantly contributes to the regression model ($\beta = 0.323$; $t = 3.628$; $p = 0.000$) and can be used to predict the dependent

variable (team performance). For each additional unit of LCC, team performance is expected to increase by an average of 0.373 (Table 6).

Table 6. The correlation coefficients associated with the linear regression model for H2
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.726	.464		5.874	.000
	Leader communication clarity.	.373	.103	.323	3.628	.000

a. Dependent Variable: Team Performance.

Source: Output SPSS

As a result, the second hypothesis is statistically supported, meaning that there is a significant relationship between the leader communication clarity and team performance, and the linear regression model predicts the level of the team performance based on the level of leader communication clarity.

The **third** hypothesis explores the existence of a causal relationship between leader digital support and team performance.

The correlation coefficient ($R=0.372$) shows a weak to moderate correlation between the predictor (leader digital support) and the dependent variable (team performance). The coefficient of determination (0.139) shows that 13.9% of the variance of team performance is explained by the leader digital support (Table 7).

Table 7. Correlational model ratio for the hypothesis H3
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.372 ^a	.139	.131	.729

a. Predictors: (Constant), Lider digital support.

Source: Output SPSS

The ANOVA test shows that the regression model is statistically significant ($p = 0.000$), indicating that the relationship between the predictor and the dependent variable is unlikely to be due to chance (Table 8). This supports the validity of the model and suggests that the independent variable contributes meaningfully to explaining the variance in the outcome.

Table 8. ANOVA^a summary for H3
ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.669	1	9.669	18.178	.000 ^b
	Residual	60.105	113	.532		
	Total	69.774	114			

a. Dependent Variable: Team performance.

b. Predictors: (Constant), Lider digital support.

Source: Output SPSS

The regression model for the H3 is represented by the following equation:

$TP = 2.346 + 0.446 * LDS$, where:

TP= team performance;

LDS= leader digital support.

The values of the regression coefficients show that the leader's openness to new communication channels significantly contributes to the regression model ($\beta=0.372$; $t=4.264$; $p=0.000$) and can be used to predict the dependent variable (team performance). For each additional unit of LDS, the team performance is expected to increase by an average of 0.446 (Table 9).

Table 9. The correlation coefficients associated with the linear regression model for H3

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	2.346	.472		4.968
	Lider digital support.	.446	.105	.372	4.264

a. Dependent Variable: Team performance.

Source: Output SPSS

This finding highlights the importance of the leader digital support for exerting influence on team performance. Leaders that offer high level of digital support to employees can increase the level of team performance.

The **fourth** hypothesis explores the existence of a causal relationship between leader empathy and team performance.

Linear regression analysis was used to investigate this relationship, with leader empathy as the independent variable and team performance as dependent variable. The correlation coefficient ($R=0.542$) illustrates a moderate correlation between the predictor and the dependent variable (Table 10). This result indicates that there is a significant association between the level of leader empathy and team performance.

The coefficient of determination ($R^2 = 0.293$) shows that 29.3% of the variance in the level of the team performance can be explained by leader empathy (Table 10). This result emphasizes the significant impact of leader empathy on team performance. The data in Table 10 suggest that an empathic leader can positively influence team performance. When the leader displays empathy and understanding of team members' needs and concerns, team members feel more valued and motivated to contribute to the success of the organization. Emotions and positive interpersonal relationships between the leader and team members can lead to cohesion and engagement in attaining the goals.

Table 10. Correlational model ratio for the hypothesis H4

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.542 ^a	.293	.287	.730

a. Predictors: (Constant), Leader empathy.

Source: Output SPSS

The ANOVA test highlights that the linear regression model significantly predicts the relationship between leader empathy and team performance, as the asymptotic significance value (0.000) is less than the 0.5 threshold (Table 11). This finding indicates that there is a significant relationship between leader empathy and team performance and that the linear regression model is an adequate predictor of this relationship.

The extremely low asymptotic significance value (0.000) suggests that the probability of obtaining such an association by chance is practically negligible. This provides strong confirmation that the linear regression model is significantly emphasizing the relationship between leader empathy and team performance.

Table 11. ANOVA^a summary for H4

ANOVA ^a					
Model		Sum of Squares	df	Mean Square	F
1	Regression	24.993	1	24.993	46.923
	Residual	60.189	113	.533	
	Total	85.183	114		

a. Dependent Variable: Team performance.

b. Predictors: (Constant), Leader empathy.

Source: Output SPSS

The regression model for the hypothesis H4 is represented by the following equation:

$TP=1.234+0.679*LE$, where:

TP= team performance;

LE= leader empathy;

The regression coefficient results show that leader empathy contributes significantly to the regression model ($\beta=0.542$; $t=6.850$; $p=0.00$) and can be used to predict the dependent variable, team performance. For each additional unit of leader empathy, team performance is expected to increase by an average of 0.679 units (Table 12).

Table 12. The correlation coefficients associated with the linear model for the hypothesis H4
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.234	.445		2.775	.006
Leader empathy	.679	.099	.542	6.850	.000

a. Dependent Variable: Team performance.

Source: Output SPSS

As a result, the fourth hypothesis is statistically supported, meaning that there is a significant relationship between the leader empathy and team performance, and the linear regression model predicts the level of the team performance based on the level of leader empathy.

This finding highlights the importance of the social and emotional abilities of the leader for exerting influence on team performance. Leaders with high levels of empathy and understanding the needs and concerns of the team members can increase the level of team performance.

The **fifth** hypothesis explores the existence of a causal relationship between digital communication reliability and team performance.

The correlation coefficient ($R=0.443$) shows a moderate correlation between the predictor (digital communication reliability) and the dependent variable (team performance). This suggests that a higher level of perceived communication reliability is associated with better team performance (Table 13).

The coefficient of determination ($R^2=0.197$) shows that 19.7% of the variance of team performance can be explained by digital communication reliability (Table 13).

Table 13. Correlational model ratio for hypothesis H5
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.443 ^a	.197	.189	.763

a. Predictors: (Constant), Digital communication reliability.

Source: Output SPSS

The ANOVA test associated with the fifth hypothesis shows that the linear regression model predicts the team performance as the asymptotic significance (0.000) is less than 0.5 threshold (Table 14). This finding shows that the linear regression model is statistically significant, and it can be used to predict the team performance based on the digital communication reliability.

Table 14. ANOVA^a summary table for H5
ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	16.112	1	16.112	27.654	.000 ^b
Residual	65.836	113	.583		
Total	81.948	114			

a. Dependent Variable: Team performance.

b. Predictors: (Constant), Digital communication reliability.

Source: Output SPSS

The regression model for hypothesis H5 is represented by the following equation:

$TP=2.390+0.445*DCR$, where:

TP= team performance;

DCR= digital communication reliability.

The values of the regression coefficients show that digital communication reliability significantly contributes to the regression model ($\beta=0.443$; $t=5.259$; $p=0.000$) and can be used to predict team performance. For each additional unit of DCR, the team performance is expected to increase by an average of 0.445 (Table 15).

Table 15. The correlation coefficients associated with the linear model for the hypothesis H5
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.390	.369		6.471	.000
	Digital communication reliability	.445	.085	.443	5.259	.000

a. Dependent Variable: Team performance.

Source: Output SPSS

These results show that digital communication reliability is a significant predictor of team performance. Hence, an increase of digital communication reliability is associated with better team performance.

The **sixth** hypothesis explores the existence of a causal relationship between leader openness to new communication channels and team performance.

The correlation coefficient ($R=0.545$) shows a moderate correlation between the predictor (leader's openness to new communication channels) and the dependent variable (team performance). The coefficient of determination (0.297) shows that 29.7% of the variance of team performance is explained by the leader's openness to new communication channels (Table 16).

Table 16. Correlational model ratio for the hypothesis H6

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.545 ^a	.297	.291	.751

a. Predictors: (Constant), Leader openness to new communication channels.

Source: Output SPSS

The ANOVA test shows that the regression model is statistically significant ($p = 0.000$), indicating that the relationship between the predictor (leader openness to new communication channel) and the dependent variable (team performance) is unlikely to be due to chance (Table 17). This supports the validity of the model and suggests that the independent variable contributes meaningfully to explaining the variance in the outcome.

Table 17. ANOVA^a summary table for H6

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.913	1	26.913	47.707	.000 ^b
	Residual	63.747	113	.564		
	Total	90.661	114			

a. Dependent Variable: Team performance.

b. Predictors: (Constant), Leader openness to new communication channels.

Source: Output SPSS

The regression model for the H6 is represented by the following equation:

$TP = 1.983 + 0.522 \cdot LONC$, unde:

TP= team performance;

LONC= leader openness to new communication channels.

The values of the regression coefficients show that the leader's openness to new communication channels significantly contributes to the regression model ($\beta=0.545$; $t=6.907$; $p=0.000$) and can be used to predict the dependent variable (team performance). For each additional unit of LONC, team performance is expected to increase by an average of 0.522 (Table 18).

Table 18. The correlation coefficients associated with the linear model for the hypothesis H6
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.983	.333		5.946	.000
	Leader openness to new communication channels.	.522	.076	.545	6.907	.000

a. Dependent Variable: Team performance.

Source: Output SPSS

In conclusion, the hypothesis H6 is statistically validated, meaning that leader openness to new communication channels positively impacts team performance. This result confirms the importance of the leader's role in adopting and promoting the modern communication practices within organization.

5. Discussions and implications

Our research found a medium correlation between team members' accessibility to communication technology and team performance (H1). These findings are partially in accord with research of Garro-Abarca *et al.* (2021) that found that access to and use of communication technology alone did not directly improve performance, its positive effect was indirect, operating through building trust among team members.

The positive impact of leader communication clarity on team performance (H2), as proved in our research, is supported by results from the research conducted by Zhang *et al.* (2022) and Fürstenberg *et al.* (2021). Their studies emphasize that when leaders possess goal and process clarity, it positively influences the motivational mechanisms within a team and improves overall performance outcomes.

Wang *et al.* (2025) found that digital leadership is positively related to employee innovative performance and Subiyanto *et al.*, 2024 found an indirect relationship between digital leadership and team performance mediated by communication effectiveness. Our study extends their findings by empirically validating the relationship between leader digital support, as a component of digital leadership and team performance (H3).

Leader empathy positively influences the team's performance (H4). These findings are in line with those of Kock *et al.* (2019) and Li *et al.* (2019) that found a connection between empathic leader and follower performance and Simon *et al.* (2022) that confirmed a strong positive link between leader empathy and effectiveness.

Based on a literature study, Shofiah *et al.* (2023) highlighted the key factors that influence team performance, such as team trust, collaboration, effective communication and leader support. Our research provided empirical evidence for the impact of leader support (H3) and digital communication reliability (H5), which is a part of communication quality, on team performance.

Promoting open and transparent communication was identified as one of the most efficient team leader strategies for building trust by Badrinarayanan (2024). Our study advances his findings by empirically validating the importance of leader clarity communication in determining the team performance.

Theoretical contributions and practical implications

This study contributes to the growing body of literature on virtual team leadership by empirically validating six predictors of team performance: access to communication technology, digital communication reliability, leader communication clarity and digital support, leader empathy and openness to new channels. These findings have significant practical implications for organization management, highlighting the need to invest in the development of leaders' communication skills and in the effective implementation and use of technology in work processes. By understanding and correctly applying the research results, organizations can improve their performance and better adapt to changes in the business environment, strengthening their competitive position in the marketplace.

The findings indicate that leaders who show higher empathy have more positive and significant impact on the level of team performance. Therefore, developing leaders' empathic skills can be considered an essential strategy for increasing team cohesion and performance. Implementing training programs focused on improving empathy and communication can have long-term beneficial effects on organizational culture. In addition, constant monitoring and evaluation of the impact of empathy on team performance will allow for continuous adjustment of leadership strategies. This underlines the importance of investing in empathic leadership as an integral part of HR and organizational development policies.

Thus, the results of this research emphasize the importance of investing in the development of communication skills and in promoting an organizational culture oriented towards innovation and adaptability. By adopting new communication channels and supporting the continuous improvement of team skills, organizations can strengthen their competitiveness and improve their long-term performance.

Promoting an organizational culture that encourages collaboration, transparency and recognition of individual contributions is decisive for the success of virtual teams. Monitoring performance through key performance indicators and regular feedback are essential for continuous improvement of team performance. At the same time, managers should be aware of the specific challenges of the virtual environment, such as the lack of physical interaction and dependence on technology. By properly managing these challenges and by promoting a balanced approach between the use of technology and human interaction, organizations can maximize the potential of virtual teams.

Limitations and future research

Despite its practical implications and contribution to theoretical development of team leadership theory, our study has several limitations that could lead to future research agenda.

The present study employed a cross-sectional design, capturing data from 115 respondents at a single point in time. While regression analysis confirmed statistically significant relationships, the causal direction of these associations cannot be firmly established. Future studies could employ longitudinal or experimental designs to investigate how the impact of leadership communication behaviors and technological access evolves over time within virtual teams.

The sample is limited to virtual teams within the Romanian BPO industry. While this focus provides important contextual insights, the research results cannot be generalized to other sectors or national contexts. Consequently, future research should examine similar leadership and communication variables across different countries or industries to assess the consistency of these results.

Another limitation is that all data were obtained through self-reported questionnaires, which may introduce common method variance and social desirability bias. While this is a common approach in organizational research, future studies should incorporate multi-source data collection.

As virtual work continues to evolve, future research should examine how leaders respond to rapid technological shifts, and whether openness to such innovations continues to serve as a performance driver for virtual teams.

Given the increasing role of AI tools in virtual collaboration (e.g., AI meeting assistants, automated project tracking), researchers could examine how leaders integrate AI-enabled communication tools and how that influences team outcomes.

6. Conclusions

The findings of our research emphasize the importance of effective leadership communication and the use of communication technology in the organizational environment. By supporting the hypotheses, the research confirms that the way leaders use technology and communicate with their team can significantly influence key aspects of the team performance such as cohesion, adaptability, satisfaction and commitment of team members, and continuous improvement of the team members skills.

Leadership communication is a particularly important factor in the success of virtual teams. By adopting a proactive approach, investing in development, and promoting an organizational culture focused on collaboration and performance, organizations can maximize their potential and successfully adapt to an increasingly digital and dynamic business environment. By exploring these directions and focusing on progress and cooperation, companies can strengthen their virtual teams and secure a place in an increasingly digitalized and competitive business environment.

In conclusion, this research provides a significant contribution to the understanding and optimization of leadership communication in the context of virtual teams, highlighting the importance of adapting to the requirements of the online environment and underlining the need for a proactive approach in managing these aspects.

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