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## Investigating the Effect of Managers' Digital Emotional Intelligence on the Dynamics of Virtual Teams

Mohammad Hossein Mohebali<sup>1\*</sup>, Soheila Hassanzadeh<sup>2</sup>, Mozghan Mostafaei<sup>2</sup>, Alireza Kasraiyani<sup>3</sup>,  
Seyed Hadi Nabavizadeh Chakari<sup>4</sup>, Meysam Hasani Estalkhi<sup>2</sup>

1. Ph.D. student, Department of Management, Government-Organizational Behavior, CT.C., Islamic Azad University, Tehran, Iran
2. PhD, Department of Management, Government-Organizational Behavior, CT.C., Islamic Azad University, Tehran, Iran
3. Ph.D. student in Business Administration, Marketing Management Major, Qa.C., Islamic Azad University, Qazvin, Iran
4. Master's degree, Department of Computer Engineering, National University of Skills, Tehran, Iran

\*Correspondence: 0065459490@iau.ir

### Abstract

Digital transformation and the increasing expansion of virtual teams have fundamentally changed the nature of organizational management and have further highlighted the role of managers in guiding human interactions within digital environments. In this regard, managers' digital emotional intelligence has received attention as one of the key factors in maintaining cohesion, interaction, and dynamics within virtual teams. The aim of this study was to examine the effect of managers' digital emotional intelligence on virtual team dynamics, using an applied approach based on transparent statistical methods. In terms of purpose, the present study was applied, and in terms of implementation method, it was descriptive-correlational. The research data were collected through a researcher-made questionnaire based on a five-point Likert scale. The statistical population included managers and members of active virtual teams in service-oriented and knowledge-based organizations and companies who had experience working in digital and remote work environments. The sample size was determined to be 230 participants using Cochran's formula, and sampling was conducted through the simple random sampling method. The validity of the instrument was confirmed through content validity, and its reliability was confirmed using Cronbach's alpha coefficient (0.89). Data were analyzed using descriptive statistics, Spearman's correlation test, and multiple linear regression in SPSS version 26. The results showed that there was a positive and significant relationship between the dimensions of managers' digital emotional intelligence, including digital self-awareness, emotional management and self-regulation, emotional flexibility, and team collaboration and coordination, and virtual team dynamics. The regression findings also indicated that team collaboration and coordination and digital emotional management played the greatest role in explaining virtual team dynamics. Overall, the findings of this study emphasize that strengthening managers' digital emotional intelligence can serve as an effective strategy for improving the performance, cohesion, and sustainability of virtual teams and can provide an appropriate basis for managerial decision-making and organizational policymaking in digital work environments.

**Keywords:** Digital emotional intelligence, managers, virtual team dynamics, digital leadership, team collaboration and coordination.



## 1. Introduction

Digital transformation has fundamentally reshaped the structure, logic, and relational architecture of contemporary organizations. As work processes, managerial communication, coordination mechanisms, and decision-making systems increasingly move into digital and hybrid environments, organizations are no longer managed only through physical proximity, face-to-face supervision, and traditional hierarchical control. Instead, managers are required to lead distributed employees, maintain trust across digital platforms, regulate interaction in technology-mediated contexts, and preserve team cohesion despite spatial, temporal, and cultural distance. This shift has made digital leadership and virtual team management central topics in management research, particularly after the acceleration of remote and hybrid work during and after the COVID-19 pandemic. Studies on virtual leadership have shown that the effectiveness of leaders in digital environments depends not only on technical competence but also on communication quality, emotional awareness, trust-building ability, adaptability, and the capacity to sustain employee engagement in conditions of uncertainty and limited physical interaction (Banker et al., 2023; Efimov et al., 2022; Kim et al., 2025).

The emergence of virtual teams has created new opportunities and challenges for organizations. Virtual teams allow organizations to access geographically dispersed talent, increase flexibility, reduce operational costs, and improve responsiveness in dynamic environments. However, they also face challenges such as communication ambiguity, reduced social presence, weakened interpersonal trust, delayed feedback, role confusion, digital fatigue, and emotional isolation. Research on virtual team performance emphasizes that coordination, trust, information sharing, and clarity of communication are among the most important determinants of team effectiveness in virtual settings (Cristea & Dinu, 2022; Mi et al., 2023; Topaloğlu & AnaÇ, 2021). Therefore, team dynamics in virtual environments cannot be understood merely as a technical issue related to software platforms or communication tools; rather, they are deeply connected to relational, emotional, and behavioral competencies that shape the quality of interaction among members.

In this context, leadership has become one of the most decisive factors in determining whether virtual teams remain cohesive, adaptive, and productive. Virtual leadership refers to the ability of leaders to influence, coordinate, motivate, and support team members through digital communication technologies and remote work systems. Bibliometric and systematic reviews of virtual leadership indicate that this field has expanded significantly, with growing attention to leader communication, digital trust, employee well-being, engagement, and the development of new managerial competencies suitable for remote environments (Banker et al., 2023; Tigre et al., 2024; Tutar & GÜLer, 2022). Digital leadership is now conceptualized as a multidimensional construct that includes technological literacy, strategic adaptability, digital communication competence, ethical awareness, collaborative orientation, and the ability to guide organizations through digital change (Guo-min, 2023; Lin et al., 2023; Pawar & Dhumal, 2024). These competencies are particularly important when teams operate under uncertainty, crisis, or rapid technological change.

Despite the importance of technology in virtual work, technology alone does not guarantee effective collaboration. Digital platforms can facilitate communication, but they cannot automatically create trust, empathy, emotional balance, or psychological safety. This is why recent studies increasingly emphasize the role of human-centered leadership in digital and hybrid environments. Managers must interpret emotional cues in text-based or video-mediated communication, identify signs of stress or disengagement, respond to conflict without the richness of face-to-face interaction, and sustain motivation among employees who may experience isolation or work-life boundary erosion. Research on remote leadership during crises has shown that emotional intelligence is strongly associated with leaders' ability to maintain supportive relationships and respond effectively to employees' psychological and emotional needs (Efimov et al., 2022; Wittmer & Hopkins, 2021). Similarly, studies of global virtual teams suggest that leaders' electronic competencies and emotional intelligence can influence employee well-being and team functioning, especially when remote work becomes prolonged or crisis-driven (Chaudhary et al., 2022).

Emotional intelligence has long been considered an essential managerial capability because it enables leaders to recognize, understand, regulate, and use emotions effectively in interpersonal and organizational contexts. In digital environments, however, emotional intelligence takes on new characteristics. Managers must exercise emotional awareness and regulation through mediated communication channels where nonverbal cues are reduced, interactions may be asynchronous, and misunderstandings can escalate quickly. Thus, digital emotional intelligence can be understood as the ability of managers to



perceive, interpret, regulate, and guide emotional processes in digitally mediated work environments. This includes digital self-awareness, emotional self-regulation, empathy in online interactions, emotional flexibility, conflict management, and the ability to maintain constructive emotional climates within virtual teams. Studies on managers' technology-mediated communication competence support this view by emphasizing that digital communication requires not only technical fluency but also relational sensitivity, interpretive competence, and strategic adaptation to communication contexts (Koponen et al., 2025).

Page | 3 The importance of digital emotional intelligence becomes even more visible when considering the emotional complexity of virtual teamwork. Virtual team members often experience uncertainty, reduced belonging, limited informal interaction, and greater dependence on written or platform-based communication. Such conditions can increase the risk of misunderstanding, emotional withdrawal, and conflict. Research on emotional intelligence and personality traits in virtual interfaces indicates that emotional competencies influence how team members manage performance, interaction, and interpersonal challenges in remote settings (Murmu & Neelam, 2022). Moreover, during periods of remote work expansion, employees and professionals have reported new demands for soft skills, emotional resilience, self-management, and communication competence (Juárez-Ramírez et al., 2023; Juárez-Ramírez et al., 2022). These findings imply that managers who possess stronger digital emotional intelligence may be better able to sustain virtual team dynamics by reducing emotional friction, enhancing trust, and facilitating adaptive collaboration.

Trust is another central component of virtual team dynamics. In the absence of daily physical interaction, trust must be built through consistency, transparency, responsiveness, and emotionally intelligent communication. Studies on trust and leadership in virtual teams emphasize that sustainable virtual collaboration depends on leaders' ability to create reliable communication patterns, encourage mutual confidence, and support shared purpose among dispersed members (Wei et al., 2025). Trust-building is especially challenging in multicultural and distributed teams, where cultural differences, communication styles, and time-zone barriers may affect interpretation and coordination. Research on virtual multicultural team management after the COVID-19 pandemic shows that managers had to revise their approaches to communication, inclusion, and coordination in response to the complexities of remote collaboration (Gasnot et al., 2023). Therefore, leadership in virtual teams requires not only the transmission of tasks and goals but also the active management of relational and emotional conditions that support team cohesion.

The crisis-driven expansion of remote and hybrid work has further demonstrated that leaders must be agile, solution-oriented, and emotionally balanced. Studies in educational and organizational contexts have highlighted the need for agile leadership, problem-solving orientation, and adaptive responses to environmental changes (Yuet et al., 2023). Similarly, research on hybrid work and researcher well-being has described leadership as a balancing act that requires managers to handle tensions between productivity, flexibility, emotional well-being, and institutional expectations (Lorca & Belli, 2023). In such conditions, emotional flexibility becomes a critical managerial capability. Managers must adjust their emotional responses, communication styles, and coordination strategies according to changing team needs, technological disruptions, and organizational pressures. Without emotional flexibility, leaders may respond rigidly to uncertainty, thereby reducing team adaptability and weakening virtual team dynamics.

The literature on digital leadership also indicates that leadership development strategies must be redesigned for the digital era. Human resource development in digitally transformed organizations increasingly focuses on cultivating leaders who can manage technological change, virtual communication, and human interaction simultaneously (Guo-min, 2023). Leadership development in remote work contexts requires attention to digital competence, emotional intelligence, conflict resolution, team engagement, and employee well-being. Studies of leadership in higher education and university settings during the COVID-19 pandemic have identified virtual leadership antecedents such as digital readiness, communication capacity, supportiveness, and the ability to sustain organizational functioning under remote conditions (Medina, 2023; Vahdati et al., 2023). These findings suggest that digital emotional intelligence may be a key element in preparing managers to lead virtual teams effectively across different organizational sectors.

Recent technological advances, including artificial intelligence, have also influenced virtual team dynamics and managerial practices. AI-powered systems can support real-time conflict resolution, communication monitoring, and decision-making processes in virtual teams, but the effective use of such technologies still depends on managerial judgment, ethical awareness,



and emotional sensitivity (Gupta, 2024). In other words, technological tools may assist managers in identifying conflict or improving coordination, but they cannot replace the emotional and relational competencies needed to interpret human behavior and respond appropriately. Similarly, the broader transformation of leadership management practices through technology has highlighted the need for leaders who can integrate digital tools with human-centered management approaches (Pawar & Dhumal, 2024). Digital emotional intelligence therefore represents an important bridge between technological capability and relational effectiveness in virtual teams.

The effectiveness of e-leadership in virtual teams is not the result of a single isolated skill but rather a configuration of multiple capabilities. Recent research using advanced analytical approaches has shown that virtual team effectiveness may depend on combinations of e-leadership conditions, including communication, support, trust, and digital interaction competence (He et al., 2025). This supports the argument that managers' digital emotional intelligence should be studied as a multidimensional construct rather than as a single general trait. Digital self-awareness helps managers recognize how their emotional states influence communication and decision-making. Digital emotional management enables them to regulate reactions and prevent emotional escalation in online interactions. Emotional flexibility allows them to adapt to unexpected changes and crisis conditions. Team collaboration and coordination reflect the relational and operational dimension through which emotional intelligence is translated into collective performance.

Employee engagement is another outcome closely related to digital leadership and virtual team dynamics. Systematic evidence on hybrid and remote workplaces shows that leadership strategies such as supportive communication, inclusion, autonomy, feedback, and trust-building are important for maintaining employee engagement (Kim et al., 2025). In virtual teams, engagement depends not only on task assignment but also on emotional connection, perceived support, clarity, and participation in team processes. When managers demonstrate digital emotional intelligence, they may enhance employees' sense of belonging and reduce the psychological distance created by remote work. This is consistent with research showing that virtual leadership is related to employees' mental health, job satisfaction, and perceptions of isolation (Efimov et al., 2022). Therefore, digital emotional intelligence can be considered a strategic managerial resource for promoting both team performance and employee well-being.

The post-pandemic business ecosystem has also intensified the need for leadership approaches that support recovery, resilience, and adaptation. Systematic reviews of post-COVID leadership approaches emphasize that leaders must develop flexibility, empathy, communication competence, and innovation-oriented thinking to guide organizations through recovery and transformation (Porkodi, 2022). In educational and organizational settings, emotional intelligence has also been identified as a foundation for leadership development during crisis periods, particularly because it helps leaders manage stress, maintain interpersonal relationships, and support organizational continuity (Semenets-Orlova et al., 2021). Furthermore, digital education and gamification research point to the broader shift toward digitally mediated learning, adaptation, and innovation, indicating that organizations increasingly require managers who are capable of continuous learning and digital behavioral adjustment (Oropeza et al., 2021). These developments reinforce the relevance of examining digital emotional intelligence as a management capability in contemporary digital workplaces.

Although existing studies have examined digital leadership, virtual leadership, remote work, emotional intelligence, e-competencies, and virtual team performance, there remains a need for empirical research that directly examines how specific dimensions of managers' digital emotional intelligence affect virtual team dynamics. Much of the literature has focused on general digital leadership competencies, employee well-being, or virtual team performance, while fewer studies have operationalized digital emotional intelligence through dimensions such as digital self-awareness, digital emotional management, emotional flexibility, and team collaboration and coordination. In addition, many organizations continue to treat virtual team challenges as technological problems, while the literature increasingly indicates that relational and emotional competencies are equally important for effective digital work. Therefore, investigating the effect of managers' digital emotional intelligence on virtual team dynamics can contribute to both theoretical development and practical management by clarifying which emotional and collaborative competencies are most influential in virtual team functioning.

Accordingly, the aim of this study was to examine the effect of managers' digital emotional intelligence on virtual team dynamics.



## 2. Methods and Materials

This applied study was conducted using a descriptive-survey design. The study examined the effect of managers' digital emotional intelligence on the dynamics of virtual teams; therefore, it required the assessment of existing conditions and the collection of field-based evidence from managers and employees working in digital environments and virtual teams. Since the purpose of the research was to measure attitudes, experiences, and practical evaluations regarding different dimensions of digital emotional intelligence and its effect on team dynamics, experimental or historical methods were not considered appropriate. The statistical population consisted of managers and members of active virtual teams in service-oriented and knowledge-based organizations and companies who had experience working in digital and remote work environments. To increase the generalizability of the findings, participants were selected from different industries and various organizational levels. The sample size was estimated at 230 participants using Cochran's formula, with a 95% confidence level and an acceptable error range of 5% to 7%. Simple random sampling was used so that all members of the statistical population had an equal chance of being selected. Demographic information, including age, gender, work experience, educational level, and type of industry, was also collected.

The data collection instrument was a researcher-made questionnaire developed based on a systematic review of theoretical literature and domestic and international empirical studies, as well as preliminary interviews with five university professors and experts in virtual team management. The questionnaire consisted of four main constructs: managers' digital emotional intelligence, emotional self-awareness and flexibility, emotional risk management and decision-making under critical conditions, and collaboration, coordination, and information exchange among team members. The items were designed using a five-point Likert scale ranging from "strongly disagree" to "strongly agree," enabling quantitative and comparative analysis of the data. Managers' digital emotional intelligence was operationally defined as managers' ability to recognize, manage, and guide their own emotions and those of team members in digital environments and virtual teams. Emotional self-awareness and flexibility referred to the ability to rapidly modify plans and respond appropriately to unexpected conditions in virtual teams. Emotional risk management was defined as the extent to which systematic procedures are used to identify, assess, and control emotional and functional risks within the team. Inter-team collaboration and coordination referred to the level of interaction, information exchange, and trust among team members and managers. The questionnaire included 20 items covering these constructs. Content validity was used to assess the validity of the questionnaire. The initial version was reviewed by several university professors and specialists in virtual team management, and their suggestions regarding item clarity, alignment with research objectives, and adequate coverage of the constructs were incorporated. To assess reliability, a pilot study was conducted with 30 members of the statistical population, and Cronbach's alpha coefficient for the whole questionnaire was calculated as 0.89, indicating desirable reliability and acceptable internal consistency.

Data analysis was conducted in two stages. First, descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to present a general profile of the participants and the research variables. Then, to test the research hypotheses and examine the relationships among the variables, Spearman's correlation test and multiple linear regression were applied. These statistical tests were selected because the data were measured on an ordinal scale and the normality of their distribution could not be fully assumed. Multiple linear regression was used to determine the explanatory contribution of the dimensions of managers' digital emotional intelligence in predicting virtual team dynamics. All statistical analyses were performed using SPSS version 26. The results of the analyses provided an empirical basis for offering practical recommendations aimed at strengthening managers' digital emotional intelligence and improving the dynamics of virtual teams.

## 3. Findings and Results

To evaluate the status of virtual team dynamics and managers' digital emotional intelligence skills, descriptive analyses were first conducted. These analyses provided an overall picture of the central tendency and dispersion of the data by reporting the minimum, maximum, mean, and standard deviation of each research variable.



**Table 1. Descriptive Statistics of the Research Variables**

Variable	Minimum	Maximum	Mean	Standard Deviation
Virtual team dynamics	2.0	5.0	3.85	0.56
Managers' digital self-awareness	2.1	5.0	3.78	0.60
Digital emotional management	2.0	5.0	3.80	0.58
Emotional flexibility	1.9	5.0	3.62	0.63
Team collaboration and coordination	2.2	5.0	3.90	0.55

As shown in Table 1, the mean score of virtual team dynamics was 3.85, indicating that the studied virtual teams were at a relatively favorable level in terms of interaction, coordination, and functional dynamism. The mean score of managers' digital self-awareness was 3.78, suggesting that managers generally had an acceptable ability to recognize their emotions and understand their effects on team interactions. Digital emotional management also had a relatively high mean score of 3.80, indicating that managers were moderately capable of regulating their own emotions and managing emotional responses within digital work environments. Emotional flexibility showed the lowest mean score among the variables, with a value of 3.62, suggesting that adaptability to unexpected changes and emotionally demanding conditions in virtual teams still requires further development. Team collaboration and coordination had the highest mean score, at 3.90, emphasizing the important role of information exchange, trust, and operational coordination in enhancing virtual team dynamics.

To test the research hypotheses and examine the relationships among the research variables, Spearman's correlation test was used. Since the data were collected using a five-point Likert scale and the normality of the variables could not be fully assumed, Spearman's correlation was selected as an appropriate non-parametric test for ordinal data.

**Table 2. Spearman Correlation Results Between Research Variables and Virtual Team Dynamics**

Variable	Spearman Correlation Coefficient	Significance Level
Digital self-awareness and virtual team dynamics	0.58	0.000
Digital emotional management and virtual team dynamics	0.61	0.000
Emotional flexibility and virtual team dynamics	0.44	0.001
Team collaboration and coordination and virtual team dynamics	0.65	0.000

As shown in Table 2, all dimensions of managers' digital emotional intelligence were positively and significantly related to virtual team dynamics. Digital self-awareness had a positive and relatively strong relationship with virtual team dynamics ( $r = 0.58$ ,  $p = 0.000$ ), indicating that managers who are more aware of their own emotions in digital interactions are more capable of guiding virtual teams effectively. Digital emotional management also showed a strong positive relationship with virtual team dynamics ( $r = 0.61$ ,  $p = 0.000$ ), suggesting that the ability to regulate emotions and manage emotional reactions in digital environments contributes to reducing conflicts and improving coordination. Emotional flexibility had a moderate but significant relationship with virtual team dynamics ( $r = 0.44$ ,  $p = 0.001$ ), indicating that managers' ability to adapt emotionally to changing conditions supports the responsiveness of virtual teams. The strongest relationship was observed between team collaboration and coordination and virtual team dynamics ( $r = 0.65$ ,  $p = 0.000$ ), showing that information exchange, mutual trust, and coordinated decision-making are central factors in strengthening the dynamism of virtual teams.

To assess the simultaneous effect of the independent variables on virtual team dynamics, multiple linear regression analysis was conducted. This analysis made it possible to determine the relative contribution of each dimension of managers' digital emotional intelligence and team collaboration in predicting virtual team dynamics.

**Table 3. Multiple Linear Regression Results for Predicting Virtual Team Dynamics**

Independent Variable	Standardized Beta Coefficient ( $\beta$ )	t-value	Significance Level
Digital self-awareness	0.28	4.32	0.000
Digital emotional management	0.32	4.85	0.000
Emotional flexibility	0.17	2.90	0.005
Team collaboration and coordination	0.36	5.15	0.000

As shown in Table 3, all independent variables had a positive and significant effect on virtual team dynamics. Team collaboration and coordination had the strongest predictive effect ( $\beta = 0.36$ ,  $t = 5.15$ ,  $p = 0.000$ ), indicating that interaction, information exchange, and coordination among team members play a central role in explaining the dynamics of virtual teams. Digital emotional management was the second strongest predictor ( $\beta = 0.32$ ,  $t = 4.85$ ,  $p = 0.000$ ), suggesting that managers'



ability to control emotional reactions and manage emotional situations in digital environments has a substantial effect on team effectiveness. Digital self-awareness also had a significant positive effect ( $\beta = 0.28, t = 4.32, p = 0.000$ ), showing that managers' awareness of their emotional states contributes to better team guidance. Emotional flexibility had the weakest but still significant effect ( $\beta = 0.17, t = 2.90, p = 0.005$ ), indicating that adaptability to changing and crisis-related conditions contributes to virtual team dynamics, although its predictive power was lower than that of the other variables. Overall, the regression results showed that emotional competencies and team-based coordination jointly contribute to improving the dynamics of virtual teams.

The overall adequacy of the regression model was examined using model fit indices. These indices were used to determine the explanatory power of the model, the general significance of the regression equation, and the independence of residuals.

**Table 4. Model Fit Indices**

Model Fit Index	Value
Coefficient of determination ( $R^2$ )	0.64
Adjusted coefficient of determination (Adjusted $R^2$ )	0.62
F statistic	101.23
Model significance level	0.000
Durbin-Watson statistic	1.92

As shown in Table 4, the coefficient of determination was 0.64, indicating that the model explained 64% of the variance in virtual team dynamics. The adjusted coefficient of determination was 0.62, confirming the stability and explanatory adequacy of the model after considering the number of independent variables. The F statistic was significant ( $F = 101.23, p = 0.000$ ), showing that the regression model had an acceptable overall fit and that the independent variables collectively explained a significant proportion of changes in virtual team dynamics. The Durbin-Watson statistic was 1.92, indicating that there was no serious autocorrelation among the residuals. Therefore, the proposed model can be considered reliable and suitable for predicting virtual team dynamics based on managers' digital emotional intelligence skills and team collaboration and coordination.

#### 4. Discussion and Conclusion

The purpose of this study was to examine the effect of managers' digital emotional intelligence on the dynamics of virtual teams. The findings showed that all dimensions of managers' digital emotional intelligence, including digital self-awareness, digital emotional management, emotional flexibility, and team collaboration and coordination, had positive and significant relationships with virtual team dynamics. The regression results also indicated that team collaboration and coordination had the strongest predictive effect, followed by digital emotional management, digital self-awareness, and emotional flexibility. These results confirm that virtual team dynamics are not shaped only by access to digital platforms or technical infrastructures, but also by managers' emotional, communicative, and relational competencies in digital work environments. This finding is consistent with studies emphasizing that virtual leadership requires a combination of technological competence, communication capability, trust-building, emotional awareness, and adaptive coordination (Banker et al., 2023; Tigre et al., 2024; Tutar & GÜLer, 2022). Therefore, the present study supports the view that effective leadership in virtual teams is a multidimensional process in which digital emotional intelligence plays a central role.

The first finding showed a positive and significant relationship between managers' digital self-awareness and virtual team dynamics. This means that managers who are more capable of recognizing their own emotional states in digital interactions are better able to guide communication, prevent emotional escalation, and maintain constructive interaction among team members. In virtual teams, where face-to-face emotional cues are limited and communication is often mediated through written messages, video meetings, and collaborative platforms, leaders' awareness of their own emotional responses becomes essential. This result aligns with research showing that managers' technology-mediated communication competence includes not only the ability to use digital tools, but also the ability to interpret relational contexts, regulate communication behavior, and adapt messages to the emotional and social needs of team members (Koponen et al., 2025). It is also consistent with studies indicating that leadership in hybrid and remote workplaces requires emotional sensitivity and reflective communication to



sustain employee engagement (Kim et al., 2025). Thus, digital self-awareness can be considered a foundational competence that enables managers to act consciously rather than reactively in virtual team interactions.

The second finding indicated that digital emotional management had a strong positive relationship with virtual team dynamics and was one of the most important predictors in the regression model. This finding suggests that managers' ability to regulate their own emotions and manage emotional tensions among team members contributes directly to team cohesion, coordination, and performance. In digital environments, emotional misinterpretations may occur more frequently because nonverbal cues are reduced and messages may be interpreted differently by different team members. Therefore, managers who can reduce tension, respond calmly to disagreement, and create emotionally balanced communication conditions are more likely to support dynamic virtual teamwork. This finding is strongly supported by studies showing that emotional intelligence moderates or strengthens the relationship between leaders' electronic competencies and employee well-being in global virtual teams (Chaudhary et al., 2022). It is also aligned with research indicating that remote leadership during crisis is associated with emotional intelligence, supportive behavior, and the ability to maintain high-quality leader–employee relationships (Wittmer & Hopkins, 2021). Furthermore, the finding is consistent with studies emphasizing that virtual leadership is related to employees' mental health, job satisfaction, and perceptions of isolation (Efimov et al., 2022). Accordingly, emotional management in digital leadership can reduce conflict, increase perceived support, and improve the psychological conditions necessary for effective virtual team functioning.

The third finding showed that emotional flexibility had a positive and significant, although comparatively weaker, effect on virtual team dynamics. This result indicates that the ability of managers to adapt emotionally and behaviorally to changing digital work conditions contributes to team responsiveness and resilience. However, its lower beta coefficient compared with collaboration and emotional management suggests that flexibility may function more as a supporting capability than as the primary driver of team dynamics. In other words, emotional flexibility becomes most effective when it is combined with active coordination, trust-building, and emotional regulation. This interpretation is consistent with studies that describe leadership in hybrid work as a process of balancing tensions between productivity, well-being, autonomy, and institutional expectations (Lorca & Belli, 2023). It also supports the argument that leaders in digitalized and crisis-ridden environments need adaptive competencies to respond to uncertainty, technological change, and organizational disruption (Lin et al., 2023). Similar conclusions have been reported in research on agile and solution-oriented leadership, where flexibility and adaptive problem-solving are presented as essential leadership qualities in complex educational and organizational environments (Yuet et al., 2023). Therefore, the present finding suggests that emotional flexibility helps managers maintain continuity and reduce disruption in virtual teams, particularly during crises or rapid changes.

The strongest relationship and the strongest regression effect were observed for team collaboration and coordination. This finding indicates that the dynamics of virtual teams depend heavily on information exchange, mutual trust, coordinated decision-making, and active interaction among members. In virtual teams, the absence of physical proximity can weaken informal learning, spontaneous communication, and social bonding. Therefore, collaboration and coordination must be intentionally designed and actively maintained by managers. This finding is consistent with studies showing that trust and leadership are essential for sustainable virtual team functioning (Wei et al., 2025). It also aligns with research identifying trust-building, communication routines, and shared understanding as important elements in the development of virtual teams (Mi et al., 2023). Similarly, studies on virtual team performance have shown that team effectiveness is influenced by communication quality, role clarity, coordination, and mutual support (Topaloğlu & Anaç, 2021). The present study therefore confirms that collaboration and coordination are not merely operational variables, but core relational mechanisms through which digital emotional intelligence is translated into team dynamism.

The results also support the growing literature on digital leadership as an emerging construct that integrates technological, relational, cognitive, and emotional competencies. Digital leadership is not limited to using digital technologies or managing remote workflows; rather, it requires the capacity to lead people through technology while preserving motivation, trust, emotional stability, and collective orientation. This interpretation is consistent with research showing that technology transforms leadership management practices and requires leaders to adopt more flexible, communicative, and human-centered approaches (Pawar & Dhumal, 2024). It also corresponds with studies emphasizing digital leadership as a requirement of the



new business ecosystem, where managers must guide organizations through technological transformation and new work arrangements (Tutar & GÜLer, 2022). The findings further support the idea that leadership development in the digital era should include communication competence, emotional intelligence, digital readiness, and team-based coordination (Guo-min, 2023). Therefore, the present study contributes to the literature by showing that digital emotional intelligence is a key mechanism through which digital leadership can enhance virtual team dynamics.

The findings are also consistent with research conducted in post-pandemic and remote work contexts. The COVID-19 pandemic accelerated the shift toward remote and hybrid work and revealed the importance of soft skills, emotional resilience, and supportive leadership in digital environments. Studies on software developers and remote workers have shown that working from home increased the need for soft skills, self-management, emotional balance, and effective digital communication (Juárez-Ramírez et al., 2023; Juárez-Ramírez et al., 2022). Research on virtual multicultural teams also suggests that the pandemic changed managerial practices by increasing the importance of communication, coordination, and sensitivity to cultural and emotional differences (Gasnot et al., 2023). In the same direction, studies of post-COVID leadership recovery emphasize empathy, adaptability, and communication as key leadership requirements (Porkodi, 2022). The present results are consistent with these findings because they show that managers' digital emotional intelligence strengthens the ability of virtual teams to remain coordinated, responsive, and cohesive.

Another important implication of the results is that emotional intelligence in digital contexts should be treated as a specific managerial competence rather than a general personal trait. Traditional emotional intelligence remains important, but digital work environments create unique emotional and communicative challenges. Managers must detect emotional signals in online communication, manage conflict in virtual meetings, reduce ambiguity in written exchanges, support employees who may feel isolated, and maintain trust without regular physical contact. Previous studies have emphasized that emotional intelligence and personality traits influence performance management in virtual interfaces (Murmu & Neelam, 2022). Studies in educational and organizational leadership also show that emotional intelligence provides a foundation for effective leadership during crisis periods (Semenets-Orlova et al., 2021). The present study extends these findings by showing that digital emotional intelligence, when operationalized through self-awareness, emotional management, flexibility, and collaboration, significantly explains virtual team dynamics.

The model fit indices further confirmed the explanatory strength of the proposed model. The coefficient of determination showed that the model explained 64% of the variance in virtual team dynamics, and the adjusted coefficient of determination confirmed the stability of the model. This indicates that the selected predictors provide a strong explanation of virtual team dynamics. The significant F statistic also confirmed the overall adequacy of the regression model, while the Durbin-Watson statistic suggested no serious autocorrelation in the residuals. These results are compatible with recent studies showing that virtual team effectiveness emerges from configurations of e-leadership conditions rather than isolated managerial behaviors (He et al., 2025). They also support recent discussions on AI-powered conflict resolution and digital coordination, which suggest that technology can improve team functioning when combined with appropriate managerial interpretation, emotional judgment, and collaborative processes (Gupta, 2024). Thus, the proposed model provides an integrated empirical explanation of how emotional and collaborative competencies contribute to virtual team dynamics.

Overall, the findings demonstrate that managers' digital emotional intelligence is a significant factor in strengthening the dynamics of virtual teams. The study confirms that digital self-awareness enables managers to understand the emotional consequences of their behavior, digital emotional management helps reduce conflict and sustain constructive interaction, emotional flexibility supports adaptation to uncertainty, and collaboration and coordination create the relational infrastructure necessary for virtual team performance. These conclusions are aligned with studies on virtual leadership, digital leadership, remote work, employee well-being, and virtual team effectiveness (Banker et al., 2023; Medina, 2023; Oropeza et al., 2021; Vahdati et al., 2023). Therefore, the present study contributes to management literature by highlighting digital emotional intelligence as a practical and theoretically meaningful construct for understanding how managers can improve the functioning of virtual teams in digital work environments.

This study had several limitations that should be considered when interpreting the findings. First, the research used a descriptive-survey design; therefore, although significant relationships and predictive effects were identified, causal



conclusions should be made with caution. Second, the data were collected through self-report questionnaires, which may be influenced by social desirability bias, subjective interpretation, or respondents' temporary emotional states. Third, the statistical population was limited to managers and members of virtual teams in service-oriented and knowledge-based organizations, which may limit the generalizability of the findings to other sectors, such as manufacturing, public administration, healthcare, or international project-based organizations. Fourth, the study focused on selected dimensions of digital emotional intelligence and did not examine other potentially important variables such as organizational culture, digital maturity, leadership style, psychological safety, technological infrastructure, or team diversity.

Future studies should use longitudinal or experimental designs to examine the causal effect of digital emotional intelligence training on virtual team dynamics over time. Researchers are also encouraged to compare different industries and organizational sectors to determine whether the importance of digital emotional intelligence varies across work contexts. Future research can expand the model by including mediating and moderating variables such as trust, psychological safety, employee engagement, digital communication quality, organizational support, and technological readiness. In addition, qualitative studies may provide deeper insight into how managers experience emotional challenges in virtual environments and how team members interpret managers' emotional behaviors in digital communication. Cross-cultural research would also be valuable, especially because virtual teams often include members from different cultural, linguistic, and professional backgrounds.

Organizations should consider digital emotional intelligence as a core managerial competency in virtual and hybrid work environments. Training programs for managers should include modules on digital self-awareness, emotional regulation in online communication, conflict management in virtual teams, adaptive responses to crisis, and trust-building through digital platforms. Human resource departments should also integrate digital emotional intelligence indicators into leadership development, performance appraisal, and promotion systems. Managers should establish clear communication norms, encourage regular information exchange, create psychologically safe digital spaces, and use collaborative technologies to strengthen coordination among team members. In addition, organizations should support managers with appropriate digital tools, feedback systems, and continuous professional development opportunities so that virtual teams can remain cohesive, adaptive, and effective.

## Ethical Considerations

All procedures performed in this study were under the ethical standards.

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## Conflict of Interest

The authors report no conflict of interest.

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