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Identifying Critical Success Factors for Virtual Team Leadership in Digitally Transformed Organizations

ABSTRACT

This study aimed to identify the critical success factors that enable effective virtual team leadership in digitally transformed organizational settings. A qualitative research design based on a phenomenological approach was employed to explore the lived experiences of individuals involved in virtual leadership. Data were collected through semi-structured interviews with 21 participants from various digitally transformed organizations in Tehran, including sectors such as technology, telecommunications, finance, and e-commerce. Participants were selected using purposive sampling, ensuring maximum variation across roles and experience levels. Interviews continued until theoretical saturation was reached. Each interview lasted 60-90 minutes and was transcribed verbatim. The data were analyzed using thematic analysis facilitated by NVivo software, allowing for iterative coding and the identification of themes and subthemes related to virtual leadership effectiveness. Analysis revealed four primary themes encompassing 20 subthemes and over 100 open codes. These themes included: (1) Communication and Information Flow, with key factors such as clarity, tool integration, and responsiveness; (2) Trust and Psychological Safety, including reliability, relationship-building, and emotional support; (3) Leadership Adaptability, covering digital literacy, conflict resolution, and delegation; and (4) Team Cohesion and Motivation, with emphasis on shared purpose, inclusion, and recognition. Participant narratives indicated that leaders who demonstrated adaptive communication, relational consistency, and digital competence fostered higher engagement, trust, and team alignment. These results align with existing studies on digital leadership and extend them by offering context-specific insights from an underexplored organizational setting. Virtual leadership effectiveness is contingent on the integration of technological fluency and emotionally intelligent practices. Leaders who cultivate clarity, trust, adaptability, and shared purpose can significantly enhance virtual team cohesion and performance in digitally transformed organizations.

Keywords: Virtual leadership, digital transformation, team communication, psychological safety.

Introduction

In the rapidly evolving landscape of work, the transformation from traditional organizational models to digitally driven environments has reshaped the structure, function, and leadership of teams. The global shift toward virtualization, driven by both technological advances and disruptions such as the COVID-19 pandemic, has positioned virtual teams as a cornerstone of modern enterprise operation. As a result, understanding the critical success factors that enable effective virtual team leadership has become essential for sustaining productivity, collaboration, and innovation across distributed workplaces [1, 2]. In such contexts, leaders are not only expected to deliver on strategic outcomes but also to navigate complex sociotechnical systems that span geographies, cultures, and digital interfaces [3, 4].

Virtual teams differ from their co-located counterparts in several critical ways, particularly in terms of communication dynamics, trust formation, coordination complexity, and leadership expectations [5, 6]. Leadership in virtual contexts is not merely a replication of traditional practices through digital tools; rather, it requires a redefinition of competencies, roles, and

relational mechanisms suited to digital interaction [7, 8]. The virtual environment introduces distinctive challenges such as information overload, reduced informal interactions, and potential disengagement—factors that, if left unaddressed, may erode team effectiveness and morale [9, 10]. Consequently, the identification of success factors specific to virtual leadership is crucial for both academic inquiry and practical application.

Research has shown that communication management stands at the forefront of effective virtual leadership. Leaders must foster clarity, consistency, and interactivity across digital channels, while simultaneously preventing miscommunication and disconnection [4, 6]. Effective communication encompasses not only the transfer of information but also the emotional tone, responsiveness, and adaptability of messages—qualities that help construct psychological safety and trust within the team [11, 12]. In this regard, the integration of appropriate communication tools, coupled with the enforcement of digital etiquette and structured feedback mechanisms, has been found to enhance collaboration and team cohesion [13, 14].

Trust, in particular, is a central construct in virtual team dynamics. The absence of physical proximity necessitates the development of alternative pathways to build trust, including transparent goal setting, shared accountability, and consistent behavior from leaders [1, 15]. Psychological safety—the perception that one can express concerns or ideas without fear of negative consequences—is closely tied to this process [10]. Leaders who cultivate an environment of openness, empathy, and responsiveness tend to foster stronger engagement and interpersonal connection, even across digital boundaries [16, 17]. Additionally, relational leadership practices, such as active listening, informal check-ins, and emotional recognition, have been highlighted as pivotal for sustaining team motivation and morale in virtual contexts [18, 19].

Another emerging theme in the literature is leadership adaptability. As digital contexts are marked by continuous change, ambiguity, and high interdependence, successful virtual leaders demonstrate the capacity to shift between directive and participatory styles based on team needs and situational demands [3, 9]. This agility is further supported by digital literacy, or the leader's proficiency in navigating communication platforms, data tools, and project management systems [20, 21]. Research has increasingly pointed to the importance of balancing structure with flexibility—where leaders are tasked with setting clear expectations while also granting team members autonomy and decision-making authority [2, 22]. The notion of shared leadership, where responsibility and influence are distributed among team members, is particularly relevant in virtual teams and has been shown to correlate with higher performance and satisfaction [10, 23].

Despite the growing body of literature on virtual teams, much of the research remains fragmented or focused on specific industries such as information technology or healthcare. There remains a pressing need for contextually grounded, empirically rich insights into the success factors that underpin virtual leadership across a broader organizational spectrum [24, 25]. Scholars argue that a deeper understanding of virtual leadership practices must account not only for technological enablers but also for cultural, emotional, and behavioral dimensions [4, 7]. Moreover, as organizations continue to adopt hybrid or fully remote models, the sustainability of virtual leadership effectiveness becomes an increasingly strategic concern [17, 26].

The current study seeks to address this gap by identifying the critical success factors for virtual team leadership in digitally transformed organizations.

Methods and Materials

Study Design and Participants

This qualitative study employed a phenomenological approach to explore the critical success factors for virtual team leadership in digitally transformed organizations. The research design was chosen to gain a deep understanding of participants' lived experiences and perceptions regarding leadership dynamics in virtual contexts. A total of 21 participants were purposefully selected from various digitally transformed organizations in Tehran, encompassing sectors such as technology, banking, telecommunications, and e-commerce. The inclusion criteria focused on individuals currently serving in or directly managing virtual teams with a minimum of two years of experience in such settings. Maximum variation sampling was applied to capture diverse perspectives from different organizational hierarchies, including team leaders, senior managers, and operational staff. The sample size was determined based on the principle of theoretical saturation, which was achieved after conducting 21 interviews, as no new themes or concepts emerged during the final stages of data collection.

Data Collection

Data were collected through semi-structured interviews, guided by an open-ended interview protocol that allowed participants to elaborate on their experiences, strategies, and challenges related to virtual team leadership. Interviews were conducted face-to-face or via secure video conferencing platforms, depending on participant availability and preference. Each interview lasted approximately 60 to 90 minutes and was audio-recorded with participants' consent. The interview questions focused on areas such as communication practices, trust-building mechanisms, performance management, digital tool usage, and leadership adaptability in virtual environments. Ethical considerations were strictly adhered to, including obtaining informed consent, assuring anonymity, and allowing participants to withdraw from the study at any point without consequence.

Data analysis

The collected data were transcribed verbatim and analyzed using thematic analysis facilitated by NVivo software. The analysis process involved iterative coding, where initial open codes were generated and then refined through axial and selective coding to identify overarching themes and subthemes. The researchers continuously compared new data with previously coded material to ensure consistency and depth in theme development. Memos and analytic notes were maintained throughout the coding process to support reflexivity and trace the evolution of key concepts. The credibility of findings was enhanced through peer debriefing and member checking, while dependability was ensured through an audit trail documenting all analytical decisions. NVivo's functionalities supported the organization and visualization of patterns across participants' narratives, ultimately enabling a rich and nuanced understanding of the success factors underpinning effective virtual team leadership.

Findings and Results

The study sample consisted of 21 participants, all of whom were employed in digitally transformed organizations based in Tehran and had direct experience with virtual team leadership, either as team leaders or members. Of the participants, 12 were male and 9 were female. In terms of age, 6 participants were between 25 and 34 years old, 9 were between 35 and 44,

and 6 were between 45 and 54. Regarding professional roles, 8 participants were team leaders or supervisors, 5 held middle management positions, and 8 were operational team members actively engaged in virtual collaboration. The participants came from various industries, including technology (7), telecommunications (5), finance (4), and e-commerce (5). Their experience with virtual teamwork ranged from 2 to 10 years, with an average of 5.6 years. All interviews were conducted until theoretical saturation was reached, ensuring diversity and depth of perspectives.

 Table 1

 Categories, Subcategories, and Concepts for Virtual Team Leadership Success

Category (Theme)	Subcategory (Subtheme)	Concepts (Open Codes)
1. Communication and Information Flow	Clarity in Communication	Clear articulation of tasks, concise emails, avoiding ambiguity, structured updates
	Responsiveness and Availability	Prompt replies, time-bound feedback, open office hours, immediate issue resolution
	Tool Integration	Unified platforms, chat and video tools, notification management, minimizing duplication
	Feedback Loops	Regular check-ins, bidirectional communication, performance feedback, coaching moments
	Digital Communication Etiquette	Muting when not speaking, respecting time zones, camera use norms
	Managing Information Overload	Prioritizing channels, summarizing discussions, reducing redundant messages
2. Trust and Psychological Safety	Reliability and Accountability	Meeting deadlines, fulfilling commitments, transparency about availability
	Relationship Building	Virtual coffee chats, informal talks, personal check-ins, shared digital spaces
	Safe Environment for Sharing	Non-judgmental reactions, open disagreement, team inclusiveness
	Trust in Leader's Competence	Leader's technical credibility, decision consistency, visible problem-solving
	Emotional Support	Recognizing stress, empathetic tone, leader reassurance
3. Leadership Adaptability	Flexibility in Management Style	Shifting leadership roles, accommodating work styles, adaptive communication
	Digital Literacy of Leader	Mastery of collaboration tools, self-training, tool selection based on task needs
	Monitoring Without Micromanaging	Goal-based monitoring, outcome focus, check-in scheduling
	Conflict Resolution in Virtual Contexts	Addressing tone issues, active listening, timely mediation
	Encouraging Innovation Remotely	Virtual brainstorming, celebrating ideas, tolerating risk-taking
	Leading by Example	Being visible online, punctuality, proactive messaging
	Delegation and Empowerment	Assigning ownership, clear delegation, trust in execution
4. Team Cohesion and Motivation	Shared Purpose and Vision	Reinforcing goals, linking tasks to vision, team alignment
	Recognition and Appreciation	Public shoutouts, e-certificates, thank-you messages
	Inclusion in Decision-Making	Virtual polling, seeking opinions, collaborative planning
	Social Bonding Opportunities	Online games, birthday celebrations, group challenges
	Work-Life Boundary Respect	No weekend emails, flexible hours, mental health days

1. Communication and Information Flow

Participants emphasized that clarity in communication was a foundational aspect of effective virtual leadership. Leaders who articulated expectations clearly, structured their digital updates, and avoided ambiguity were seen as more effective. One participant noted, "What really helps is when my manager sends bullet points instead of long paragraphs—it saves time and prevents confusion" (P4). Another added, "Clear instructions mean I don't have to guess or ask again" (P11).

Responsiveness and availability of the leader emerged as another key success factor. Interviewees appreciated prompt replies and structured check-in times. As one participant put it, "Even if she can't answer immediately, she always lets us know when she'll respond" (P6). Such responsiveness helped virtual teams feel supported and connected.

Participants also valued tool integration, highlighting the benefit of using unified platforms for task management and communication. "We use one platform for everything—chat, meetings, and documents. It cuts down on confusion," explained one team member (P15). Integrating tools streamlined collaboration and reduced information loss.

Feedback loops were widely mentioned, with many participants indicating that regular performance discussions and coaching moments created a sense of engagement. One virtual team lead shared, "I hold bi-weekly feedback sessions; it helps us stay aligned and adjust quickly" (P9).

Maintaining digital communication etiquette was noted as a subtle but important skill. Interviewees described norms such as respecting silence, using video appropriately, and timing messages considerately. "When people talk over each other or forget to mute, it disrupts everything," said one participant (P2).

Finally, managing information overload was essential to prevent burnout and miscommunication. Participants reported that summarizing long threads, reducing redundant notifications, and prioritizing messages helped them remain focused. As one respondent shared, "My manager sends a daily summary rather than spamming updates all day. It's a game changer" (P13).

2. Trust and Psychological Safety

The theme of reliability and accountability came up frequently. Leaders who kept promises, acknowledged delays transparently, and delivered consistently were viewed as trustworthy. One participant remarked, "When she says she'll get back to us by Friday, she always does" (P7), reinforcing the importance of dependability in remote settings.

Relationship building was another crucial factor. Participants appreciated when leaders initiated informal conversations or organized casual meetups. "We have a virtual coffee every Wednesday—it helps us bond outside of work talk," noted a team member (P10). Such efforts humanized the virtual experience.

The subtheme of creating a safe environment for sharing revealed that team members felt more engaged when they could express disagreement or raise concerns without fear. One interviewee emphasized, "He always listens when I challenge an idea—he doesn't take it personally" (P12).

Trust in the leader's competence was linked to respect and acceptance of authority. When leaders demonstrated digital literacy, strategic insight, and consistent problem-solving, participants were more likely to follow them. As one interviewee said, "I trust her decisions because she understands both the tech and the business" (P1).

Providing emotional support emerged as a vital component, especially during moments of stress or burnout. Leaders who checked in on personal well-being, acknowledged emotional strain, and responded empathetically were appreciated. "Last month, I was overwhelmed, and my manager gave me two days off without asking for details," recalled a participant (P16).

3. Leadership Adaptability

Participants consistently pointed to flexibility in management style as a success factor. Virtual leaders who adjusted their tone, strategy, and communication methods depending on individual needs were considered more effective. One respondent shared, "She knows some of us need structure, while others work better with autonomy" (P3).

Digital literacy of the leader was another area of emphasis. Leaders proficient in using collaborative tools were described as more efficient and credible. "He taught us shortcuts in the software that even IT didn't know. That builds trust," stated one participant (P8).

Balancing oversight with autonomy was expressed in the subtheme monitoring without micromanaging. Several interviewees appreciated leaders who focused on outcomes rather than time tracking. "As long as I deliver results, she doesn't care if I work at 10 a.m. or 10 p.m.," explained a remote employee (P18).

Conflict resolution in virtual contexts also emerged as a defining feature. Leaders who noticed interpersonal friction early and addressed it through direct, respectful conversations were more successful. One team member noted, "We had a tension during a project, and he set up a private Zoom to talk it out. It really helped" (P5).

The subtheme of encouraging innovation remotely reflected how leaders created space for experimentation and ideation. "She asks for crazy ideas in our weekly stand-ups. We know we won't be judged," said a participant (P20).

Leading by example reinforced credibility and trust. Participants described how leaders who were punctual, visible online, and communicative set a cultural tone. "He always joins early and turns his camera on—that motivates us," said one team member (P19).

Finally, delegation and empowerment were seen as leadership strengths. Allowing team members to take ownership and trusting them with key responsibilities fostered motivation. "She assigned me to lead a client call—it showed she trusted me," recalled an interviewee (P14).

4. Team Cohesion and Motivation

Participants identified shared purpose and vision as essential to unify distributed teams. Leaders who frequently reiterated goals and connected individual tasks to broader missions were seen as effective. "He reminds us why our work matters every week—it keeps us aligned," shared a participant (P6).

Recognition and appreciation were highlighted as drivers of motivation. Publicly acknowledging contributions through digital badges, thank-you emails, or shoutouts in meetings reinforced a sense of value. "After I closed a deal, he posted about it on the team channel. That meant a lot," said one employee (P21).

Promoting inclusion in decision-making helped foster engagement. Leaders who asked for input and co-created decisions generated higher ownership. "She always asks for our input—even on small things. That makes me feel heard," explained one participant (P17).

Creating social bonding opportunities in the absence of physical offices was another important subtheme. Teams organized virtual games, birthday parties, and casual group chats. "We even played an online escape room last month—it brought us closer," said a team member (P2).

Respect for work-life boundaries was crucial in avoiding burnout. Leaders who honored flexible schedules and discouraged after-hours messaging were especially appreciated. "He never emails after 6 p.m. That respect means everything when you work from home," explained one participant (P13).

Discussion and Conclusion

The findings of this qualitative study revealed four interrelated categories of critical success factors for virtual team leadership in digitally transformed organizations: communication and information flow, trust and psychological safety, leadership adaptability, and team cohesion and motivation. These categories, distilled from the experiences of 21 professionals engaged in virtual leadership and collaboration, highlight the multidimensional nature of effective leadership in digital contexts. Each category contains a cluster of subcomponents that collectively shape the performance, engagement, and sustainability of virtual teams.

The first major theme, communication and information flow, was emphasized by nearly all participants as foundational to virtual leadership success. Participants described how clarity, responsiveness, digital etiquette, tool integration, and

structured feedback processes directly impacted team functioning. This finding resonates with prior studies that frame communication as a linchpin in distributed environments [4, 6]. In particular, Mahadevan highlights that virtual communication must extend beyond task delivery to include relational and motivational content, thereby supporting the psychological needs of remote workers. Moreover, Abdul and Kozlovski emphasize the role of centralized communication tools and feedback loops in reducing cognitive overload and improving task coordination—patterns clearly reflected in our participants' narratives.

The subtheme of responsiveness, particularly the perceived availability of leaders, aligns with findings from Johnson, who emphasizes the importance of temporal responsiveness in maintaining trust and preventing delays in virtual contexts [13]. Similarly, the effective use of integrated digital platforms to streamline communication echoes conclusions by Cripe and Burleigh, who highlight the need for virtual leaders to manage both communication richness and information overload through selective use of tools [3]. Our findings also support the work of Shore, who notes that communication in virtual teams must be frequent, planned, and emotionally attuned to replicate the benefits of in-person interaction [11].

The second theme, trust and psychological safety, emerged as a powerful determinant of virtual team stability. Participants described how leaders built trust through accountability, personal outreach, consistency, and emotional support. These insights align strongly with previous studies underscoring the fragility of trust in virtual environments and the need for leaders to actively cultivate it [1, 15]. For instance, Wickramasinghe emphasizes that trust in global virtual teams must be earned and maintained through visible reliability and emotional authenticity. Furthermore, Han and Hazard argue that psychological safety is one of the strongest predictors of virtual team resilience, especially in high-pressure settings [10]. Our findings confirm this, as participants noted that team members felt more engaged and willing to contribute when their leader was approachable, empathetic, and non-punitive.

Relationship building, often achieved through informal digital interactions such as virtual coffee breaks or personal checkins, supports arguments by Cosme and colleagues who stress the importance of virtual rituals for promoting team cohesion and emotional connection [19]. These "soft structures" serve not only to humanize digital work but also to buffer against isolation—a concern also noted by Baughman, who documented the emotional costs of sustained virtual work environments [23].

The third category, leadership adaptability, covered the ability of leaders to tailor their approaches to varying team needs, tasks, and digital demands. Participants praised leaders who demonstrated flexibility in their management style, digital fluency, and a balance between autonomy and guidance. These results align with findings by Dhir et al., who describe successful virtual leaders as "adaptive navigators" capable of shifting styles in response to dynamic team conditions [2]. Additionally, Pringgabayu and colleagues highlight that digital leadership is not static—it evolves alongside the team's maturity, technology adoption, and cross-cultural exposure [21]. Our participants' emphasis on non-micromanaging oversight, context-sensitive conflict resolution, and situational delegation reflects these dynamics.

The role of digital literacy—a leader's competence in using virtual platforms—was frequently highlighted, and this is echoed in studies by Lee and Lumseyfai, who suggest that a leader's tech fluency shapes team trust and operational efficiency [14, 20]. Similarly, Mihajlović-Milićević and colleagues argue that leaders in virtual environments must not only be skilled in communication and coordination, but also proficient in the tools that facilitate these functions, especially in agile or tech-

driven sectors [27]. The use of virtual tools to promote innovation and shared decision-making among participants also finds support in the work of Enrique and Joel, who link tool-based transparency to collaborative creativity [26].

The final theme, team cohesion and motivation, centered on how leaders nurtured a sense of purpose, inclusion, and morale. Participants described how shared vision, public recognition, inclusive decision-making, and social bonding activities contributed to team cohesion. This mirrors earlier conclusions from Kilcullen et al., who observed that emotional connection and recognition are necessary for sustaining engagement in distributed teams [17]. Rughani and Bircher likewise argue that effective virtual leaders serve as emotional anchors, helping the team stay aligned with collective goals during times of uncertainty or digital fatigue [16]. The emphasis on inclusion and democratic decision-making also aligns with findings by Kozhevnikova, who notes that transformational leadership in virtual contexts requires co-creation, shared leadership, and mutual respect [8].

Social bonding, even in non-work interactions, was reported by participants as essential for reducing emotional distance and fostering a sense of belonging. These observations support studies by Catinella and Esparza, who document how informal virtual spaces can replicate some of the cultural and relational benefits of physical offices [25]. Moreover, Retz's concept of "virtual team rituals" as a strategy for managing social connection finds a practical parallel in participants' references to online games, birthday celebrations, and weekly social hours [28]. Lastly, participants' strong appreciation for leaders who respected work-life boundaries underscores emerging concerns around digital burnout and the need for humane leadership—a theme gaining traction in the post-pandemic scholarship [18, 29].

Together, these findings suggest that effective virtual leadership is neither solely technological nor exclusively relational—
it is integrative, requiring leaders to navigate both task structures and human complexity within digitally mediated settings.
By aligning our empirical results with prior scholarship, we confirm that successful virtual leadership is contingent on a leader's ability to combine digital competence with emotional intelligence, adapt strategy to context, and consistently reinforce trust and engagement.

Despite its valuable contributions, this study has several limitations. First, the sample was limited to 21 participants from organizations based in Tehran, which may constrain the generalizability of findings to other cultural or regional settings. Organizational norms, technology infrastructure, and leadership expectations may differ across industries and geographies. Second, although the phenomenological approach allowed for in-depth exploration of participant experiences, it also relied heavily on self-report, which may be subject to recall bias or social desirability effects. Additionally, the study focused exclusively on the perspectives of leaders and team members with at least two years of virtual experience; perspectives from newly formed virtual teams or entry-level employees may have yielded additional insights.

Future research should consider replicating this study in diverse cultural and industry settings to examine whether the identified success factors hold in different digital and organizational contexts. Comparative studies between hybrid and fully remote teams may also illuminate variations in leadership needs. Longitudinal designs could be employed to track how leadership effectiveness evolves over time in virtual teams, especially in response to technological changes or organizational restructuring. Furthermore, mixed-method approaches that integrate quantitative measures—such as trust scales or performance metrics—with qualitative narratives could provide a more comprehensive view of virtual leadership dynamics. Finally, future research might explore the role of AI-enabled platforms and their impact on leader-team interaction in virtual environments.

To enhance the success of virtual team leadership, organizations should invest in digital leadership training that emphasizes both technical competence and emotional intelligence. Leaders should be equipped with the skills to manage communication across diverse platforms, resolve conflicts remotely, and support psychological well-being. Clear communication protocols, flexible work policies, and recognition systems can help sustain team engagement. Establishing regular feedback loops and fostering informal virtual interactions can enhance trust and cohesion. Ultimately, organizations that prioritize relational and adaptive leadership in their digital transformation strategies will be better positioned to thrive in the evolving future of work.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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