Systematic Literature Review of Exploring the Role of Leader during Conflict: A Case of Virtual Teams

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Abstract: - The growing internationalization of the workforce and the widespread influence of technology have accelerated the development of virtual teams. Although these teams have various benefits, like flexibility and diversity, they also pose certain obstacles, especially in leadership and dispute resolution. Despite much research on this subject, a coherent understanding continues to be unattainable. This systematic review seeks to consolidate current research on leadership and conflict management in virtual teams, reveal common themes, suggest optimal approaches, and underscore ongoing research deficiencies. A thorough search was performed across various databases with keywords including "virtual teams," "leadership," and "conflict management." Rigorous inclusion and exclusion criteria were implemented to guarantee the pertinence and quality of the investigations. Chosen publications were meticulously evaluated, with information on study design, sample size, principal findings, recommendations, and research deficiencies removed. This review analyzes 11 peer-reviewed articles, highlighting essential themes including the need for customized leadership training in virtual environments, the pivotal importance of communication technologies, the challenges and opportunities associated with multiculturalism, and the changing dynamics of shared leadership. The studies provide significant insights, but industry-specific research and empirical studies on multicultural virtual team leadership outcomes are needed. There are some problems with virtual teams, but they have become an important part of modern business. Their success is largely dependent on their ability to lead effectively and resolve conflicts. The results underscore the significance of adaptable leadership, cultural awareness, and efficient communication strategies. A further study focused on sector characteristics and cultural nuances is essential to improve the effectiveness of virtual teams in different environments.

Key-Words: - Leadership, Virtual Teams, Conflict Management, Cross-cultural communication, Team dynamics, Remote collaboration, Leadership training.

1 Introduction

Globalization and rapid technological advancements have connected the world. The widespread use of laptops, cell phones, and internet access has facilitated real-time communication, despite physical restrictions, and transformed work patterns, [1].

This significant development has enabled virtual teams—individuals working together across time zones, regions, and cultures using technology to achieve common goals, [2].

Virtual teams are being used a lot more these days as companies try to find a wide range of talented people around the world, [3].

In the late 20th century, technological advancements have facilitated the emergence of virtual organizations. When multinational corporations were faced with the challenge of coordinating across a large number of geographical locations and time zones, they turned to early forms of telecommunication technology in order to connect their teams without having to spend excessive costs associated with relocation. [4] following IBM's and

Ford's experiments, it evolved into a worldwide organizational model altering business practices.

Due to the fact that it made real-time communication more accessible and cost-effective for businesses of all sizes, the internet revolution of the 1990s had a tremendous impact on the dynamics of business. As a result of their ability to facilitate cooperation across geographical borders, platforms such as Skype and Zoom, which were once only available to large corporations, have been transformed into crucial tools for small and medium-sized businesses, [5], [6]. The effectiveness of virtual teams has been significantly enhanced by the 21st century thanks to technological advancements such as broadband internet and cloud computing. These advancements made it possible for teams to collaborate in real-time and centralized information through the use of platforms such as Google Drive and Dropbox, [4].

The adoption of virtual teams accelerated for numerous reasons. They provided multinational corporations with the ability to manage teams in different markets while maintaining global standards, reduced the need for frequent travel, and offered employees greater flexibility, enhancing work-life balance, [6], [7]. Additionally, platforms like Upwork and Freelancer popularized "on-demand" hiring, allowing organizations to access global talent for specific projects in a cost-effective manner, [8]. The COVID-19 pandemic further emphasized the necessity of virtual teams, proving their viability for both large and small businesses alike.

However, virtual teams face challenges similar to co-located teams, particularly in managing conflicts. These conflicts, commonly categorized as task-related, relationship-based, or process-related, can arise from differences in perspectives, cultural backgrounds, and communication styles, [9], [10]. Task-related conflicts can, when managed well, promote creativity and innovation. In contrast, relationship-based disputes arising from personal tensions are intensified by the absence of face-to-face encounters, possibly resulting in misunderstandings, [11].

Meeting schedules and work delegation can also cause process disputes, which may negatively impact team performance, [12]. Remote teams must resolve these problems differently than typical teams. While open communication and empathy are crucial, virtual teams must adapt to digital communication's limits,

where non-verbal cues and time zone variations may delay resolution and increase tensions, [9], [13].

Virtual teams have special tools and techniques to close communication gaps in spite of these obstacles. Though limited, video conferencing helps overcome communication challenges. Furthermore, the heterogeneous makeup of virtual teams introduces an increasing number of conflict resolution solutions, influenced by differing cultural and professional backgrounds, [14], [15], [16].

Transactional leaders focus on performance measurements and may miss intrinsic motivators, causing unhappiness, whereas laissez-faire leaders neglect team members' needs, causing misalignment, [17].

Transformational, servant and adaptable leadership styles have demonstrated more efficacy in promoting collaboration, resolving conflicts, and sustaining team cohesion in remote environments, [18], [19], [20].

This systematic review seeks to consolidate current research on leadership's involvement in conflict management within virtual teams, offering practical insights for promoting harmonious and productive remote work settings.

2 Problem Formulation

Virtual teams have become a central feature of the modern business landscape, fueled by globalization, technological advancements, and the increasing need for flexibility in work arrangements. While these teams offer several advantages, such as access to a global talent pool, cost reductions, and enhanced flexibility, they also present significant challenges, particularly in leadership and conflict management. Virtual teams often span multiple time zones, cultures, and professional backgrounds, making leadership and conflict resolution more complex compared to traditional, co-located teams. The absence of face-to-face interaction, cultural diversity, and reliance on digital communication tools exacerbate the difficulties in effectively managing team dynamics.

Despite a growing body of research on leadership and conflict management in virtual teams, a coherent understanding of how these elements interrelate remains elusive. Much of the existing literature has highlighted the importance of leadership styles in fostering collaboration and resolving conflicts within virtual settings. However, significant gaps remain in

understanding how specific leadership approaches can be tailored to virtual environments, especially when dealing with multicultural teams, distributed leadership models, and the limitations of digital communication. Furthermore, the role of technology in facilitating or hindering conflict resolution has not been fully explored, and there is a lack of empirical research on the effectiveness of leadership behaviors and techniques in managing conflict across different virtual team contexts.

This systematic review aims to consolidate existing research on leadership and conflict management in virtual teams, focusing on identifying key themes, challenges, and opportunities. It will explore how leadership styles—such as transformational, servant, and adaptable leadership—can be applied in virtual environments to enhance team cohesion and conflict resolution. Additionally, it will examine the impact of cultural diversity, communication tools, and decentralized leadership on team dynamics and conflict management. By identifying research gaps and synthesizing findings from the literature, this review seeks to provide actionable insights for improving virtual team effectiveness and offer directions for future research.

3 Research Gap

Virtual teams have become more critical in today's digitally transformed and globally connected business world. They authorize players more space and entry to a broader range of skills. More research must be accomplished on the complex interplay between virtual leadership and conflict control. On the other hand, cultural diversity has limited non-verbal communication, and geographical distribution makes it harder for conventional leaders to achieve their goals. By creating relationships and allocating tasks. Also, it lacks face-to-face relationships and quick resolution techniques; virtual teams discover it increasingly difficult to manage conflicts, which is an essential element of team dynamics. In addition, recent research has found some parts of this complexity, but many gaps remain.

[21] emphasized the significance of stakeholder support, multicultural skills, high expectations, and reliable technology in virtual project administration. However, their research required thoroughly analyzing the subtle distinctions in conflict resolution between virtual and traditional teams. [22] recognized the negative impacts of conflicts in

decision-making processes, but there should still be more complete solutions to dive into these issues effectively. This gap highlights the urgent need for practical explanations to declare conflict better. In addition, it also highlights how managers should proactively manage and resolve challenges in virtual conditions.

Also, the results of previous studies that were strange to the context put into question the generalizability of current research across various environments. The study conducted in an educational environment [23] showed that transformational leadership is effective in digital learning environments. However, how these results can be utilized in business environments with different goals and limitations is still being decided.

A considerable gap exists in the cultural dynamics of virtual teams, which are commonly made up of people who live all over the globe, despite the apparent volume of cultural comprehension in improving team cohesion and productivity, [24]. In addition, this study has found a lack of empirical research examining the efficacy of leadership behaviors and techniques in overseeing multicultural virtual teams. The sophistication of virtual teams, which often compete with diverse cultural values, communication styles, and work priorities, strengthens leadership and conflict resolution problems. This gap needs research investigating how managers may effectively address and resolve these differences, [24].

[25] introduce a further challenge to how team members work collaboratively with leaders, which is helpful for virtual teams. This evolution from traditional leadership structures raises the query of how to effectively handle conflicts in teams without a single authoritarian leader. The developing leadership traits in virtual teams may cause conventional dispute-resolution methods to be revised. As a result, there is a growing demand for a study that creates conflict management methods appropriate for decentralized leadership structures.

As virtual teams become more prevalent, the necessity for special leadership training methods rises. According to [26] underscores the crucial significance of administration training in virtual contexts. In addition, there needs to be a complete framework that manages the distinctive challenges of conflict management in digital settings. Virtual leadership's complexities include communication barriers and cultural differences that require effective

tools, strategies, and practices substantially different from those used in traditional settings.

[27] made progress in mapping this place; however, their initial results only touch upon the intricate relationship between leadership and conflict management in virtual teams. A vast and meticulous analysis is needed to understand this dynamic thoroughly and formulate appropriate answers.

[21] elucidated the crucial influence of technology on virtual teams, emphasizing that technology significantly impacts interactions and results. The impact of technical instruments on the mitigation or exacerbation of conflicts is a crucial subject for future research. As virtual teams function at the convergence of leadership and technology, comprehending the impact of various tools and platforms on conflict resolution tactics will yield significant insights. It is crucial to conduct continuous research on how technology affects team dynamics because it is always changing.

4 Methods

The aim of this systematic review was to accumulate an extensive knowledge of virtual team leadership and conflict management. On the other hand, systematic reviews are famous for employing severe and consistent ways to summarise evidence. It can make sure that all critical studies of the study question are included. This method provides a holistic view of the literature which recognizes research gaps and attracts decisions based on evidence. The necessity to obtain a holistic view of the research subject led to the choice to explore different databases. It includes Scopus, PubMed, the Web of Science, and Google Scholar, which are the main resources for peer-reviewed journals. The academic severity and comprehensive article collections of these databases were the deciding factors in their selection.

By providing the ever-evolving essence of technology and work dynamics from 2000 to 2023. On the other hand, these 23 years were selected to seize the importance of virtual team leadership. In the 21st century, a period is seeing influential technological advances, changing force demographics, and growing support for remote working meetings.

The study had chosen the time frame of 2000-2023 to show how virtual teams have evolved along with technology. As broadband internet became more prevalent and tools such as Skype and early cloud-based applications began to take root, it was an exciting time that marked a drastic shift in how people worked in the early 2000s. These developments set the stage for the virtual teams of today. Another factor that contributed to the growing need for organizations to collaborate across boundaries during this period was globalization, which expanded the dependency of organizations on virtual collaboration. By including studies up to 2023, this study also captures the significant impact of COVID-19, where virtual teams were no longer a choice but rather an imperative. The pandemic illuminated the pros and cons of leading and resolving disputes by virtual teams, dramatically changing virtual work practices. Therefore, the timeline includes all stages of the necessary phases of virtual team development. This ensures that the conclusions drawn are entirely in line with current organizational settings.

The selection of keywords was directed by the major objectives of research that ensure a focused yet insensitive study. The term "virtual teams" was employed to capture the unique context of geographically dispersed teams that communicate through technology. It does not address the specific problems encountered by such conventional co-located teams."Leadership" has been added since it is the key to directing team dynamics in online settings, encouraging cooperation, and settling disputes. Among the core themes of this review are several leadership philosophies that impact the settlement of conflicts. Lastly, "conflict management" was chosen to specifically highlight one of the biggest issues of virtual teams. Effective control of conflict is necessary for maintaining team cohesiveness and productivity, especially in places where little interaction is available. The terminologies allowed the search technique to specifically focus on the study that explores how leadership and conflict management interact particularly in the virtual team setting.

5 Systematic Searching Strategies

The search strategy employed to collate studies relevant to the role of leadership in conflict management within virtual teams was meticulous, nuanced, and designed to ensure both the breadth and quality of the information gathered. Keywords such as 'virtual teams,' 'leadership,' and 'conflict

management' were used." This broad-based approach was undertaken initially to ensure that all conceivable studies related to these themes could be caught in the research net. However, recognizing that a mere aggregation of terms could yield an overwhelming volume of loosely related studies, Boolean operators like "AND" and "OR" were strategically employed. The purpose of this was to fine-tune the search algorithm. For example, coupling the terms "virtual teams" AND "leadership" sharpened the focus of the search to extract studies that specifically deal with the intersection of these two domains. The PRISMA flowchart illustrates systematic reviews. Out of 689 records identified through database searching, 593 remained after duplicate checks. During the screening, 93 remained. Finally, the remaining 593 articles were assessed for their eligibility, leading to the exclusion of 582 articles because they were non-peer-reviewed, language barriers, not relevant to the topics as defined in this review, and timeframe restrictions. In the end, 11 studies were included in the meta-analysis.

This approach was further refined by the application of stringent inclusion and exclusion criteria. Setting these parameters aimed at ensuring that the compiled research corpus would be not just expansive but also deep, honed in on the particular topic of interest, and held to rigorous academic standards. Included were articles that were written in English, published within a specific 23-year time frame (2000 to 2023), solely focused on the dynamics of leadership roles during conflicts in virtual teams, and housed in peer-reviewed journals. Any digression from these criteria led to the exclusion of the study. This excluded non-English publications and publications outside the set time frame, as well as materials not subject to peer review, such as books or magazine articles, thereby maintaining the academic rigor of the review. As shown in Figure 1 (Appendix), the PRISMA flow diagram outlines the systematic process for study selection, beginning with database searches and culminating in the inclusion of 11 studies for meta-analysis.

To argue that this strict approach successfully divided quality from quantity is an understatement. The original group of 689 articles was cut down to 593 after duplicates were removed. In addition, it used strict inclusion and exclusion criteria; however, it declined that figure to a meagre 11. It included that each of these 11 articles was then carefully reviewed for relevancy, grade, and subject depth. This caution provided that the final preference included some of the most helpful, thought-provoking, and scientifically valuable solutions to what managers can do to support virtual teams deal with conflicts.

Table 2 (Appendix) presents a summary of various studies included in the review, outlining their methodologies, key findings, recommendations, and research gaps. [21] employed a quantitative survey of project managers to identify key traits for successful virtual project management, including stakeholder support, multicultural experience, high expectations, and consistent technology. They recommended initial face-to-face meetings and clear communication of roles and responsibilities but noted a gap in exploring the nuances of conflict resolution in virtual teams compared to traditional setups. [22] conducted an experimental study using GSS-based virtual teams, focusing on conflicts during decision-making. They found that integrative conflict resolution led to better team performance and recommended focusing on integrative conflict styles. However, the study did not address effective management or mitigation of conflicts. [28] surveyed 159 virtual team members to examine the roles of leadership and communication technologies in managing conflict. Their study concluded that leadership roles like 'monitor' and 'coordinator' can reduce conflicts but highlighted the lack of understanding in virtual team leadership dynamics. [29] used survey and archival data from MMOG to examine how relationship and process conflicts influence team performance, with leadership conflict management styles moderating the effects. They recommended specific conflict management strategies based on the type of conflict but pointed out that the interplay between conflict types and leadership styles is not well understood. [27] conducted a quasi-experimental study on 141 students, finding that conflict management mediates the relationship between goal commitment and team performance. They recommended encouraging commitment to team goals and conflict management strategies, though the study had limited evidence and pointed to a need for further research. [23] surveyed 318 undergraduate students, finding that transformational leadership was more effective than transactional leadership in managing conflict in online learning. Their study suggested an emphasis on transformational leadership in e-leadership training but was limited to an academic setting.

[26] surveyed 52 respondents from various sectors, highlighting that leadership is the foremost need in virtual teams, followed by software tools and training. They recommended leadership training tailored for virtual environments but did not explore the interaction between leadership and other factors like cultural nuances. [24] conducted a literature review and found that effective leadership and an understanding of multiculturalism are crucial for virtual teams, while poor communication can lead to conflict. The study called for more focus on conflict resolution techniques but identified a lack of solutions in the existing literature. [23] used grounded theory interviews with 8 field managers to emphasize the importance of building trust and effective conflict resolution for virtual team performance. They recommended holistic training programs for virtual team leaders but noted that their study was limited to the technology industry. [25] surveyed 70 project-based teams and found that high levels of team power base diversity could enhance the positive effects of shared leadership on team performance. They recommended adopting shared leadership models in temporary teams with diverse power bases, though the interplay between shared leadership and team member characteristics was not well explored. Finally, [30] conducted a literature review on leadership requirements in multicultural virtual teams, concluding that leaders need specific skills such as sensitivity and flexibility. They recommended a guide for leader behavior in multicultural teams but noted that the behaviors and skills identified were not empirically tested.

6   Data Analysis

The study provides a complete understanding of leadership and conflict solutions within virtual teams. An examination of many studies shows numerous individuals yet related themes showing the effect of leadership styles on conflict management in virtual settings. The main themes enclose the value of clear communication, stakeholder approval, and even the application of technology. In addition, these are important for reducing misconceptions and enabling more seamless team relations. The study also indicates how the integrative conflict resolution process. In addition, it can improve team performance, mainly when making decisions. This indicates how essential leadership is for allowing teams to deal with challenging issues.

Moreover, administration positions are created to attack specific conflicts, such as managing task conflicts and addressing procedural problems. In addition, it helps mitigate conflict and improve results. The analysis emphasizes the importance of adaptive leadership techniques in tackling the distinct problems virtual teams face. It includes obstacles to digital communication and cultural diversity. The need for custom leadership training centered on conflict resolution and cultural awareness is emphasized to prepare leaders with the crucial skills to develop effective and cooperative virtual teams.

7   Results

7.1 General Finding
The systematic review of the established literature delivers a multidimensional viewpoint of leadership and conflict resolution in virtual teams. The results from the evaluated study are organized into discrete yet related issues.

7.1.1 Key Traits for Effective Leadership
The literature always highlights clear attributes and activities that underpin acceptable virtual leadership. According to [21], stakeholder consent, regular technology benefits, and multiculturalism knowledge are necessary. Building on this, [30] implies that managers should mainly show empathy, flexibility, and power while guiding multicultural virtual teams. Therefore, it is evident that effective virtual leadership necessitates various technical expertise and healthy interpersonal skills.

7.1.2 Emphasis on Communication
Among the numerous significant takeaways from the study is that communication plays an essential part in the actions of virtual teams. To be more specific, [28] highlight the fact that the selection of communication technology by leaders, in conjunction with their proactive role adoption, can significantly reduce the number of conflicts that arise between tasks and processes. The efficacy of leadership becomes inextricably linked to the quality and clarity of communication when confronted with the virtual environment, which is devoid of non-verbal cues. Leadership styles and communication efficiency, especially in heterogeneous teams, warrant additional study.

7.1.3 Conflict Typologies and Management Styles

Dissecting the nature and management of conflict forms another cornerstone. While [28] categorize decision-making phase conflicts as detrimental, [29] showed that conflict negatively influences team performance, while process conflict positively does so [22], [29]. It was also shown how the influence is moderated by leadership conflict management style. The influence is moderated by effective leadership that focuses on conflict management. Though the literature offers glimpses of recommended leadership styles for different conflict types, a more consolidated guideline for leaders remains a noticeable absence.

7.1.4 Exploring Shared Leadership Dynamics

The domain of shared leadership in virtual teams stands out as an evolving paradigm. [25] shed light on the potency of shared leadership, especially in the face of diverse team power structures to enhance the positive effects of shared leadership on team performance and conflict management. However, the literature review also hints at existing gaps, particularly around how shared leadership dovetails with traditional leadership roles and influences conflict dynamics.

7.1.5 Imperative of Tailored Training

A common suggestion from different studies is to give virtual teams specific training and skill development. [26] and [13] both highlight the specific complexity of virtual teams, which emphasize the need to break away from standard training paradigms. Having said that, there is still a lack of a specific paradigm in the literature that addresses virtual conflict management.

7.1.6 Cultural and Industry Dimensions

Finally, cultural, industry, leadership, and conflict management interactions are occasionally examined. Despite [24] emphasis on cultural understanding's critical importance, [13] restrict their focus to the tech industry. Leadership and conflict management are two areas that are seeing a surge in research attention as of late.

The study of leadership and conflict management in virtual teams has covered a lot of areas, however numerous areas need more investigation.

8 Implications of the Findings

The systematic review offers critical insights into the dynamics of leadership and conflict resolution within virtual teams. These findings highlight the necessity of customized techniques for virtual environments and indicate future research, training, and managerial procedures.

8.1 Rethinking Leadership Training

The prior need for activity programs tailored for virtual team administration is of essential essence. [26] and [13] showed practical proof of the inadequacies of traditional leadership activity programs in virtual environments. This study emphasized that conventional teaching methods do not handle the complicated interpersonal issues and technology needs of virtual associations. [13] found that choosing a high-trust environment in virtual contexts is basic for team efficacy. Traditional training modules seldom investigate trust-building processes in screen-mediated circumstances. [26] highlighted this contrast, emphasizing the necessity for leadership to prioritize training designed for virtual domains, with particular awareness of cultural differences, which are sometimes forgotten in conventional training [13], [26] (Table 3, Appendix).

8.2 Embracing Diverse Communication Technologies

Communication methods are more than logistical findings in virtual teams; they can influence team connections and efficacy. [28] emphasize that leadership decisions in this domain can either foster cohesion and clarity or, alternatively, create uncertainty and separation. However, beyond the simple utilization of technological instruments, there exists the necessity for expertise. Organizations must do more than only acquire the latest communication tools. Equally important is the effort to guarantee that every member, from leadership to the newest recruit, is sufficiently taught and proficient in utilizing these platforms. The effective combination of appropriate tools with skilled users can greatly enhance the productivity and morale of virtual teams, [28].

8.3 Crafting Multicultural Sensitivity

Rapid globalization is changing team cooperation, leading to more multicultural virtual teams. Scholars like [30] and [24] stress how important it is for leaders to have a deep understanding of different

cultures in order to handle any kind of conflict that might arise within the team. This rising multiculturalism in virtual teams is about more than just recognizing differences; it is also about comprehending the intricate cultural nuances, traditions, and social conventions that team members bring with them. Without this knowledge, there may be misunderstandings that cause arguments, low morale on the team, and less work getting done.

Organizations seeking to mitigate conflicts among virtual team members must execute proactive methods to promote a deep appreciation and concern for cultural diversity, [30]. Providing cross-cultural training sessions is a substantial measure in this regard. These meetings can lead team members to global perspectives, negotiation strategies, and cultural communication methods. Job rotations across various locales might also provide the necessary knowledge. The main aim is to establish a workplace distinguished by mutual respect and understanding, ensuring each person feels valued and acknowledged, [30].

8.4 Flexibility in Conflict Management Styles

The intricacies of conflicts in virtual teams necessitate a refined understanding of various payment strategies. According to [22], conflict sources may occur from tasks, procedural matters, or interpersonal dynamics among team members. This variability in dispute genesis needs leaders to seek different conflict resolution policies. A flexible and adaptable system is essential, customizing the resolution path to the exact nature of the conflict.

[29] argued that understanding the essence of the dispute is crucial. Task-oriented disputes may be better determined by taking a more analytical tack and highlighting the significance of defined assignments. On the other hand, if the conflicts stem from operations, the present team protocols may need to be reviewed and revised. On the other hand, disputes in associations, which are often the most delicate, may necessitate mediation or even team-building actions to restore friendship and trust. The importance of integrative conflict resolution is a promising approach that emphasizes various methods. Managers can prevent conflicts from affecting team cohesiveness and productivity using a multi-pronged approach [29]. With the rapid rise of technology, new methods of handling conflicts in virtual teams are appearing. The benefit of AI for conflict resolution and monitoring is one such

development. In order to recognize early signs of anxiety or misunderstanding, AI-based keys can monitor team communications for movements such as low mood, delayed response, or increased vocabulary within emails and chats. These technologies allow leaders to avoid conflicts before they escalate by offering them real-time insights. Also, by making tailored resolutions, AI-based systems have the possibility to enhance decision-making in complex situations, [31].

AI-driven explanations track team communications to notice early indicators of stress or miscommunication by recognizing negative moods in emails and conversations or escalating language. This would be excellent for tech teams' dynamics, especially software development teams that utilize Slack or Microsoft Teams. Virtual teams governing health-related telemedicine initiatives can employ AI to enable faster dispute compromise and better communication amongst diverse specialists. AI is also helpful in aerospace and security industries, where collective and distributed team tasks are in high demand. Also, virtual reality makes practical conflict solution workshops for global trade teams in a global corporate setup, [32].

8.5 Harnessing Shared Leadership

[25] indicate that the diversity of power bases within a team enhances the beneficial impact of shared leadership on team performance. This essentially suggests that in teams with a varied mix of power structures and influences, shared leadership can work more effectively than traditional top-down hierarchical leadership models.

The transition to non-hierarchical leadership frameworks, especially within virtual teams, aligns with the changing dynamics of work. Virtual teams frequently consist of persons from varied backgrounds, areas of expertise, and geographic locations. In such contexts, a unique leadership approach may only sometimes yield efficacy. Distributing leadership tasks can improve team performance by using different team members' different skills and perspectives.

[25] suggested shared leadership standards for temporary teams without leaders, particularly those with other power bases. This highlights the growing recognition that little administration frameworks may require review in virtual collaboration's fluid and dynamic domain. However, the study emphasises a significant research gap that examines the relations

between shared administration and the features of individual team associates. The complex qualities of virtual teams and the various influences that affect them require more research to enhance virtual team performance [25].

In specific teams, virtual leadership will be instrumental. Shared leadership allows people to lead according to their capabilities, significantly improving effective problem-solving and innovative measures in multidisciplinary initiatives that need expertise from several areas. Due to the allocation of shared administration, teams can swiftly adapt to developing events in agile circumstances where responsiveness and flexibility are important. This method is well-suited for teams interested in creative endeavours, as it encourages collaboration and causes multiple ideas through equitable participation and collective responsibility. Again, self-managed teams that enable members to take responsibility for goals and decision-making collectively, separate from a singular authority figure are helping to shared leadership, [33].

Shared leadership offers many advantages, but it also has several disadvantages that could diminish a team's success. Lack of a clear leader can cause delays and confusion, especially when time is of the essence or there is a lot of pressure. An important disadvantage is the chance of ambiguity in decision-making. Shared leadership can also cause role and responsibility conflicts, especially in multicultural teams with different assumptions about authority and hierarchy. Team cohesiveness and productivity suffer when these disagreements are not handled carefully. Another potential issue is unequal participation, which goes against the principles of leadership that have been agreed upon. This occurs when certain participants actively take charge while others sit on their hands. In order to address the team's needs, the necessary corrective actions include methods of effective communication, well-structured processes, and dispute resolution, [34].

8.6 A Call for Industry-specific Research
[13] focus on the technology sector underscores that the dynamics of leadership and conflict management might vary across industries. Organizations need to be cognizant of such industry-specific nuances. Moreover, there's a pronounced need for academic and corporate researchers to delve into these industry-specific dimensions, enriching the existing literature.

8.7 Traditional versus Virtual Training
Traditional trainings focus on in-person training, doubt resolution, feedback and to develop inter-personal skills. Participants can get a chance to read the body language and learn. However, it is expensive and difficult to access for geographically dispersed regions. On the contrary, virtual trainings give remote area access, cheaper and provide flexible time and ease of access from different locations (Table 1, Appendix). Despite such great inputs they may lack physical interactions and inter-personal communication skills, [35].

8.8 Digital Use in Financial Analysis
The digital electronic approach of financial data modeling is quite successful nowadays in accounting, audit and analysis capabilities. Rather than traditional paper-based methods, this technique is much reliable, resourceful, quick and error free. The convergence and transformation of accounting and the Internet of Things (IoT), cloud computing, big data, and the digital economy have led to significant improvement and necessary reforms. However, the usage of FinTech in accounting and finance research is hardly known. FinTech can disseminate significant under-allocation and divert worries about abuse and deixis in accounting management through digital gains from the internet business and transactions, investigation of FinTech's inherent worth, or pertinent inquiries, [36].

9 Emerging Trend
The rapid rise of technology encourages creativity in managing conflicts among virtual teams. A significant trend is the application of artificial intelligence (AI) in conflict monitoring and solution. AI-driven systems can investigate team communications for practices such as negative sentiment, delayed reactions, or escalating language in emails and chats, allowing the early detection of stress or miscommunication. It includes solutions that provide leaders with real-time understandings, enabling proactive solutions to disagreements before they escalate into significant issues. Also, AI-driven systems can enhance the decision-making rate in disputed systems by creating tailored explanations based on team dynamics and historical data.

This contains virtual and augmented reality, which affect personal interactions and are more helpful in managing team issues and surmounting

communication problems inherent in virtual work settings. It could change leadership techniques in virtual teams, making dispute solutions more data-driven, attuned to the complexities of current workplaces, and efficient.

10 Conclusion

This study concluded that virtual team leadership and dispute solutions reveal a sophisticated understanding of the details that underlie team energy and cohesiveness. The data integration shows several interlocking pieces showing the substantial interactive effects of communication tactics, dispute-resolution procedures, leadership principles, and cultural sensitivity.

At first, the challenges of distance teams necessitate more adaptable leadership methods in the present day. Leaders must show technical proficiency and interpersonal capabilities to manage cultural diversity and digital communication obstacles. It was resolved that clear communication, even technology benefits, and the help of stakeholders are important for facilitating misconceptions and effective collaboration. Studies have shown that effective leaders include cultural sensitivity and communication strategies in their plans to foster team relationships and resolve disputes. A comprehensive analysis of conflict typologies and essential methods highlighted the significance of a customised approach. Different problem-solving solutions must be employed in work-, process-, and relationship-based problems; integrative conflict resolution techniques have been highly effective in these areas. On the other hand, these strategies show promising opportunities for conflict solutions and expectation control in virtual settings, particularly when proactive technology integration. In addition, it includes the implementation of AI-based conflict monitoring systems. The study also emphasises the growing majority of shared leadership in virtual communities. Although this model encourages inclusivity and capitalises on the various strengths of team members, it necessitates well-defined systems for decision-making and clear communication protocols to control potential opacity and accountability inequalities. Shared leadership is an ideal match for agile or transitional project teams, where flexibility and rapid reaction are important.

The crucial condition for virtual, context-specific leadership activity is that conventional ways of social activity sometimes need to be revised to provide leaders with a way to manage virtual association challenges. In addition, it includes the ability to manage cultural diversity and develop trust in screen-mediated interactions. Leadership training programs that combine digital tool proficiency with cross-cultural awareness and conflict resolution skills are urgently required to provide success in these scenarios.

Finally, the review requires sector-specific strategy and analysis. Specific industries, such as technology, healthcare, and aerospace, deliver unique options and challenges for virtual teams. An awareness of these nuances can improve team performance and the performance of leadership strategies. The evolving domain of virtual cooperation necessitates buy-in tailored training. In addition, it is important to adopt sophisticated communication technology and flexible leadership approaches. As the virtual workspace grows, ongoing research and practical innovations will be important for sustaining productivity and fostering cohesive teams in a globalised context. The sophistication of virtual teams necessitates universal leadership, dispute resolution, cultural awareness, and proficient technological utilisation.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this work, we used Quillbot and Grammarly in order to improve the readability, language, and correct sentence structures. After using these tools, we reviewed and edited the content as needed and take full responsibility for the content of the publication.

References:

[1]   Brown SG, Hill NS, Lorinkova N (Nataly) M, Leadership and virtual team performance: A meta-analytic investigation, *European Journal of Work and Organizational Psychology*, 30, 2021, 672-85. https://doi.org/10.1080/1359432X.2021.1914719.

[2]   Mysirlaki S, Paraskeva F, Emotional intelligence and transformational leadership in virtual teams: lessons from MMOGs. *LODJ*, 41, 2020, 551-

66. https://doi.org/10.1108/LODJ-01-2019-0035.

[3] Garro-Abarca V, Palos-Sanchez P, Aguayo-Camacho M, Virtual Teams in Times of Pandemic: Factors That Influence Performance, *Front Psychol* 12, 2021, 624637. https://doi.org/10.3389/fpsyg.2021.624637.

[4] Lee MR, Leading Virtual Project Teams: Adapting Leadership Theories and Communications Techniques to 21st Century Organizations. 2nd ed, *Auerbach Publications,* 2021. https://doi.org/10.1201/9781003119869.

[5] Chin W, Technology, war and the state: past, present and future, *International Affairs*, 95, 2019, 765-783. https://doi.org/10.1093/ia/iiz106.

[6] Karismariyanti, M., Astuti, E. S., Sukoharsono, E. G., & Darmawan, A. (2023). A Systematic Literature Review and Bibliometric Analysis of IT Governance Disclosure in Scopus Database. In Proceedings of the *Fifth Annual International Conference on Business and Public Administration* (AICoBPA 2022). Malang, Indonesia: Universitas Brawijaya, November 2–3, 2022. DOI: 10.2991/978-2-38476-090-9_40.

[7] Batırlık SN, Gencer YG, Akkucuk U, Global Virtual Team Leadership Scale (GVTLS) Development in Multinational Companies, *Sustainability*, 14, 2022,1038. https://doi.org/10.3390/su14021038.

[8] Batool SN, Imam H, Conflict Resolution with Constructive Controversy, Team Performance: A Meta-Analysis, *SSRN Journal* 2019. https://dx.doi.org/10.2139/ssrn.3380120

[9] Stratone M-E, Vătămănescu E-M, Treapăt L-M, Rusu M, Vidu C-M, Contrasting Traditional and Virtual Teams within the Context of COVID-19 Pandemic: From Team Culture towards Objectives Achievement, *Sustainability* 14, 2022, 4558. https://doi.org/10.3390/su14084558.

[10] Klonek FE, Kanse L, Wee S, Runneboom C, Parker SK, Did the COVID-19 Lock-Down Make Us Better at Working in Virtual Teams? Small Group Research, 53, 2022, 185-206. https://doi.org/10.1177/10464964211008991.

[11] Alaiad A, Alnsour Y, Alsharo M, Virtual Teams: Thematic Taxonomy, Constructs Model, and Future Research Directions, *IEEE Trans Profess Commun* 62, 2019, 211-38. https://doi.org/10.1109/TPC.2019.2929370.

[12] Morrison-Smith S, Ruiz J, Challenges and barriers in virtual teams: a literature review, *SN Appl Sci*, 2, 2020, 1096. https://doi.org/10.1007/s42452-020-2801-5.

[13] Turesky EF, Smith CD, Turesky TK, A call to action for virtual team leaders: practitioner perspectives on trust, conflict and the need for organizational support, *OMJ*, 17, 2020, 185-206. https://doi.org/10.1108/OMJ-09-2019-0798.

[14] Han SJ, Kim M, Beyerlein M, DeRosa D, Leadership Role Effectiveness as a Mediator of Team Performance in New Product Development Virtual Teams, *J of Leadership Studies* 13, 2020, 20-36. https://doi.org/10.1002/jls.21677.

[15] Caillier JG, Testing the Influence of Autocratic Leadership, Democratic Leadership, and Public Service Motivation on Citizen Ratings of An Agency Head's Performance, *Public Performance & Management Review*,43, 2020, 918-41. https://doi.org/10.1080/15309576.2020.1730919.

[16] Zaman U, Florez-Perez L, Khwaja MG, Abbasi S, Qureshi MG, Exploring the critical nexus between authoritarian leadership, project team member's silence and multi-dimensional success in a state-owned mega construction project, *International Journal of Project Management*, 39, 2021,873-86. https://doi.org/10.1016/j.ijproman.2021.10.007.

[17] Breevaart K, Zacher H, Main and interactive effects of weekly transformational and laissez-faire leadership on followers' trust in the leader and leader effectiveness, *J Occupat & Organ Psyc* 92, 2019, 384-409. https://doi.org/10.1111/joop.12253.

[18] Crews E-R, Brouwers M, Visagie JC, Transformational and transactional leadership effects on communication styles, *Journal of Psychology in Africa*, 29,2019, 421-428. https://doi.org/10.1080/14330237.2019.1675996.

[19] Weerawardane SD, Jayawardana AKL, Factors affecting Virtual Team Performance: A Theoretical Integration, *JMR* 9, 2022. https://doi.org/10.29145/jmr/91/08.

[20] Ali A, Wang H, Johnson RE, Empirical analysis of shared leadership promotion and team creativity: An adaptive leadership perspective, *J Organ Behavior*, 41, 2020, 405-23. https://doi.org/10.1002/job.2437.

[21] Curlee, Wanda, Gordon, Robert L. (2004). Leading through Conflict in a Virtual Team. In *2004 PMI Global Congress Proceedings*, PMI Global Congress, North America, Anaheim, CA, Newtown Square: Project Management Institute, 2024, [Online]. https://www.pmi.org/learning/library/leading-through-conflict-virtual-team-8209 (Accessed Date: December 15, 2024).

[22] Paul S, Seetharaman P, Samarah I, Mykytyn P, Understanding Conflict in Virtual Teams: An Experimental Investigation using Content Analysis, Proceedings of the 38th Annual Hawaii International Conference on System Sciences, Big Island, HI, USA: *IEEE*; 2005, 40-44. https://doi.org/10.1109/HICSS.2005.647.

[23] Chang W, Lee C, Virtual team e-leadership: The effects of leadership style and conflict management mode on the online learning performance of students in a business- planning course. *Brit J Educational Tech*, 44, 2013, 986-99. https://doi.org/10.1111/bjet.12037.

[24] Isaac Mustapha M, Identifying Factors That Impact Virtual Teams, *ABR,* 5(2), 14-19, 2017. doi: 10.14738/abr.52.2685.

[25] Sinha R, Chiu C (Chad), Srinivas SB, Shared leadership and relationship conflict in teams: The moderating role of team power base diversity, *J Organ Behavior,* 42, 2021, 649-67. https://doi.org/10.1002/job.2515.

[26] Alhasanat E, Alawadi M, Hammad M, Dynamic Virtual Teams in Project Management, *IJUNESST*, 8, 2015, 251-8. http://dx.doi.org/10.14257/ijunesst.2015.8.7.25.

[27] Pazos P, Conflict management and effectiveness in virtual teams, Team Performance Management: *An International Journal*, 18, 2012, 401-17. https://doi.org/10.1108/13527591211281138.

[28] Wakefield RL, Leidner DE, Garrison G, Research Note —A Model of Conflict, Leadership, and Performance in Virtual Teams, *Information Systems Research*, 19, 2008, 434-55. https://doi.org/10.1287/isre.1070.0149.

[29] [29] Gallenkamp, J., Korsgaard, M. A., Picot, A., Welpe, I. M., & Wigand, R. T. (2010). Conflict, conflict management, and performance in virtual teams. *Proceedings of the 16th Americas Conference on Information Systems (AMCIS)*, Lima, Peru, August 12-15, [Online]. http://aisel.aisnet.org/amcis2010/304 (Accessed Date: December 15, 2024).

[30] Schweimler ZA. Leadership Job Requirements in Multicultural Virtual Teams: Which Behaviour and Skills Do Leaders Need to Manage Multicultural Virtual Teams Successfully? A Review. GJSD 2022;2:12–26. https://doi.org/10.52398/gjsd.2022.v2.i2.pp12-26.

[31] Rane N, Enhancing Customer Loyalty through Artificial Intelligence (AI), Internet of Things (IoT), and Big Data Technologies: Improving Customer Satisfaction, Engagement, Relationship, and Experience. *SSRN Journal* 2023. https://dx.doi.org/10.2139/ssrn.4616051

[32] Morandini S, Fraboni F, De Angelis M, Puzzo G, Giusino D, Pietrantoni L, The Impact of Artificial Intelligence on Workers' Skills: Upskilling and Reskilling in Organisations, *Informing Sci J*, 26, 2023, 39-68. https://dx.doi.org/10.28945/5078.

[33] Eisenberg J, Gibbs J, Erhardt N, *The Role of Vertical and Shared Leadership in Virtual Team Collaboration,* 2016. 10.4018/978-1-4666-9688-4.ch002.

[34] Wu Q, Cormican K, Shared Leadership and Team Effectiveness: An Investigation of Whether and When in Engineering Design Teams, *Front Psychol* 11, 2021, 569198. https://doi.org/10.3389/fpsyg.2020.569198.

[35] Webster J, Wong WKP, comparing traditional and virtual group forms: identity, communication and trust in naturally occurring project teams, *The International Journal of Human Resource Management*, 19, 2008, 41-62. https://doi.org/10.1080/09585190701763883.

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[36] Weshah S, Modeling and Analyzing of Financial Data within Digital Transformation Era and its Impact on Balanced Scorecards Utilizations: A Theoretical Review, *Financial Engineering*, 2, 2024, pp.180-186. doi: 10.37394/232032.2024.2.17.

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Conflict of Interest
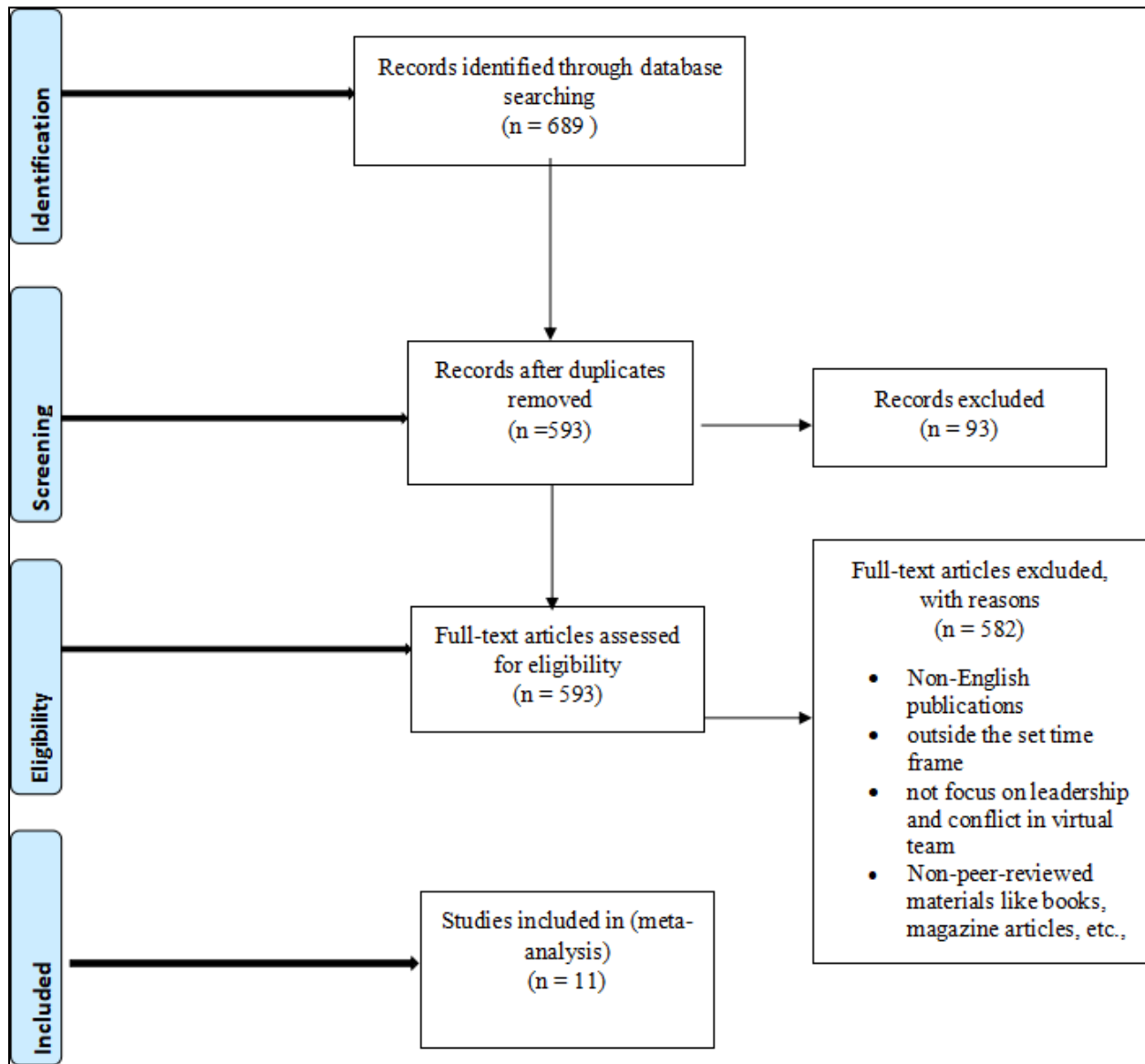The authors have no conflicts of interest to declare.

APPENDIX

Fig. 1: PRISMA flowchart

Table 1. Summarizing the inclusion and exclusion criteria

Criteria Type	Description
Inclusion Criteria	
Language	Articles must be published in English.
Publication Date	Must be published between the years 2000 to 2023.
Focus	Must explicitly focus on leadership roles during conflicts in virtual teams.
Source	Must be sourced from peer-reviewed journals.
Exclusion Criteria	
Language	Non-English publications are excluded.
Publication Date	Articles published outside the set time frame of 2000 to 2023 are excluded.
Focus	Studies not focusing explicitly on leadership during conflict in virtual teams are excluded.
Source	Non-peer-reviewed materials like books, magazine articles, etc., are excluded.

Table 2. Summary of the included studies in this review

Authors/Year	Title	Methodology	Key Findings	Recommendations	Research Gap
[21]	Leading through conflict in a virtual team	Quantitative; survey of project managers; 93 usable surveys	Key traits for successful virtual project management include stakeholder support, multicultural experience, high expectations, and consistent technology.	Recommend initial face-to-face meetings, and clear communication of project plans, roles, and responsibilities.	The study leans on a comprehensive literature review but suggests more nuances in conflict resolution for virtual teams as compared to traditional setups are needed.
[22]	Understanding conflict in virtual teams	Experimental; GSS-based virtual teams; content analysis	Conflicts in the choice phase of decision-making were detrimental. An integrative conflict resolution style led to better performance.	Focus on integrative conflict resolution styles for better team performance.	The study only identifies types of conflicts and their impact but not how to effectively manage or mitigate them.
[28]	A model of conflict, leadership, and performance in virtual teams	Survey-based; 159 virtual team members from a U.S. telecommunications corporation and five Korean firms	Communication technologies and specific leadership roles can effectively reduce task and process conflicts.	Leaders should assume roles like 'monitor' for task conflicts and 'coordinator' for process conflicts.	The dynamics of virtual team leadership in conflict management are not yet well understood.
[29]	Conflict, Conflict Management, and Performance in Virtual Teams	Survey and archival data from MMOG	Relationship conflict negatively influences team performance, while process conflict positively does so. The influence is moderated by leadership conflict management style.	Leaders should adopt competitive conflict management for process conflicts and collaborative conflict management for relationship conflicts.	Little is known regarding the interplay between different types of conflict and the corresponding conflict leadership styles in virtual teams.
[27]	Conflict management and effectiveness in virtual teams	Quasi-experimental study; data collected from 141 students in 39 teams	Conflict management mediates the relationship between goal commitment and team outcomes. Greater goal commitment leads to better conflict management and thereby better team performance.	Encourage commitment to team goals and promote active conflict management strategies.	Limited preliminary evidence; and suggestions for future research are presented.
[23]	Virtual team e-leadership	Quantitative; 318 undergraduate students	Both leadership style and conflict management mode influence online learning performance. Transformational leadership is more effective than transactional leadership in conflict situations.	Emphasize transformational leadership and multiple conflict management modes in e-leadership training.	Focused only on an academic setting.
[26]	Dynamic virtual teams in project management	Quantitative; 52 respondents from various sectors	Leadership is the foremost need in VTs, followed by appropriate software tools and training.	Organizations should prioritize leadership training tailored to VT environments and be aware of cultural differences.	Does not investigate the interaction between leadership and other factors like cultural nuances.
[24]	Identifying Factors That Impact Virtual Teams	Literature Review	Effective leadership and understanding multiculturalism are crucial. Poor communication can lead to conflict.	More focus should be on conflict resolution techniques.	Limited solutions on conflict resolution in the existing literature.
[13]	A call to action for virtual team leaders	Qualitative; grounded theory;	Building a high-trust environment and effective conflict	Develop holistic training programs for VT leaders.	Limited to the technology industry; could lack generalizability.

Authors/Year	Title	Methodology	Key Findings	Recommendations	Research Gap
		interviews with 8 field managers	resolution are key to VT's performance.		
[25]	Shared leadership and relationship conflict in teams	Quantitative; 70 project-based teams	High levels of team power base diversity can enhance the positive effects of shared leadership on team performance.	Recommendations for temporary teams without formally designated leaders to adopt shared leadership models, especially with diverse power bases.	The interplay between shared leadership and individual team member characteristics.
[30]	Leadership Job Requirements in Multicultural Virtual Teams	Literature Review	Leaders need specific behaviors and skills like sensitivity, flexibility, assertiveness, etc., to manage multicultural virtual teams successfully.	A guide for appropriate leader behavior in multicultural virtual teams and for recruiter selection.	Does not empirically test the identified behaviors and skills.

Table 3. Comparing leadership styles and conflict management approaches in virtual versus traditional teams

Aspect	Virtual Teams	Traditional Teams
Leadership Styles		
Transformation	Motivational approaches like video calls and messaging, depend on communication and emotional intelligence.	Direct and physical communication
Adaptability	Quick adjustment to cultural challenges, flexible digital time	Logistic challenges, and in-person interactions are needed
Transactional	task-oriented project management tools like Asana or Trello, progress through digital metrics.	Monitors directly through physical error and concrete checkpoints.
Shared Leadership	Dynamic leadership roles, supported by collaborative tools like Slack or Microsoft Teams.	Needs a structured team and in-person discussion
Conflict Management Approaches		
Communication Tools	Video conferences, instant messages, and AI-driven monitor tools solve conflicts.	Face-to-face meetings, body language reading, and immediate feedback to resolve conflicts
Non-verbal Cue	verbal or written communication to address limited conflicts.	Non-verbal communication
Different Time Zone	Asynchronous communication delays conflict resolution.	Resolution is faster, similar to the scheduled team.
Cultural Sensitivity	Efforts to maintain assorted cultural norms and expectations.	Physical workspace and informal interactions
Training	Virtual, includes AI and remote access.	In-person workshops