

# LEADERSHIP STRATEGIES IN VIRTUAL WORKSPACES: INVESTIGATING EFFECTIVE MANAGER-EMPLOYEE RELATIONSHIPS IN REMOTE WORK ENVIRONMENT IN THE SOFTWARE INDUSTRY OF PAKISTAN

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## ABSTRACT

*The shift to remote work has transformed traditional leadership dynamics, particularly in digitally driven sectors like the software industry. This study explores how transformational and transactional leadership styles influence job satisfaction among remote employees, with a specific focus on the moderating role of communication frequency. Drawing on Leader-Member Exchange theory, the research uses a quantitative approach with data collected from 168 remote software professionals. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to examine the hypothesized relationships. Results reveal that both transformational and transactional leadership positively affect job satisfaction, with transformational leadership having a stronger impact. Furthermore, communication frequency significantly moderates the relationship between transformational leadership and job satisfaction, amplifying its positive effect. However, no significant moderating effect was observed for transactional leadership. These findings underscore the importance of consistent communication in enhancing leadership effectiveness in virtual environments and offer practical guidance for software industry leaders navigating remote work dynamics.*

**Keywords:** Transformational Leadership; Transactional Leadership; Job Satisfaction; Communication Frequency; Remote Work; Virtual Workspace.

## INTRODUCTION

Over the last decade, the global workplace has witnessed a fundamental transformation, driven in large part by the widespread adoption of remote work. This shift accelerated sharply during the COVID-19 pandemic and has continued to evolve since, especially within the software

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industry (Pilk, 2021). As a sector that heavily relies on digital tools and infrastructure, software development has been an example of how organizations can operate efficiently in virtual environments (Laato et al. 2023). In this changing landscape, leadership strategies have taken on a renewed importance, particularly in shaping the quality of manager-employee relationships and the overall work experience.

Remote work settings present a unique set of challenges and opportunities. In industries like software development—where collaboration, innovation, and rapid iteration are core elements—the way leaders engage with their teams has a significant impact on both productivity and employee morale (Franken et al., 2021). Traditional leadership approaches that depend on in-person supervision and physical proximity are no longer sufficient. Instead, virtual leadership calls for rethinking how guidance, motivation, and feedback are delivered across digital platforms. Within this context, two leadership styles—transformational and transactional—offer valuable frameworks for understanding how different managerial behaviors can influence outcomes such as job satisfaction.

Transformational leadership involves inspiring and empowering employees by fostering a shared vision, encouraging innovation, and supporting personal growth. It tends to resonate well in environments that demand adaptability and intrinsic motivation. On the other hand, transactional leadership emphasizes structure, clarity, and performance-based rewards. It offers clear expectations and accountability, which can be especially effective in project-driven work common in software teams. Each of these styles can contribute positively to employee experience, but the effectiveness may vary depending on how leadership is adapted to virtual settings.

Job satisfaction—defined as a person’s overall attitude and emotional response to their job—remains a central indicator of organizational health. Higher job satisfaction is often linked to improved performance, lower turnover, and greater organizational commitment. In remote environments, where opportunities for casual interaction and spontaneous feedback are reduced (Coffey & Wolf, 2018), leadership becomes a primary influence on how satisfied employees feel in their roles. Managers who provide clarity, support, and recognition through virtual means are better positioned to enhance team morale and engagement (Kicheva, 2021).

However, the influence of leadership on job satisfaction in remote settings is not unidimensional. The frequency of communication between managers and employees plays a vital role in shaping perceptions and experiences (Coun et al. 2023). Regular communication

helps replace the informal check-ins that naturally occur in physical offices, reducing ambiguity and creating a sense of connection (Webster-Trotman, 2021). When communication is infrequent, remote workers may experience uncertainty, isolation, or a lack of direction, which can erode job satisfaction. Therefore, the frequency of communication can act as a moderating factor that either strengthens or weakens the impact of leadership style on employee satisfaction.

In the software industry, these dynamics are particularly pronounced. Development teams often work across time zones, depend on asynchronous tools, and navigate tight deadlines. These conditions require leaders to be deliberate in how they connect with their teams, address challenges, and maintain engagement. Despite the relevance of these challenges, there is still limited empirical research focused specifically on how leadership styles affect job satisfaction in remote software teams, and even less on how communication frequency influences these relationships.

The theoretical foundation for this research is grounded in the Leader-Member Exchange Theory, which encompasses both transformational and transactional leadership styles. This framework allows for a comprehensive exploration of how various leadership behaviors function in different contexts. In virtual environments, these behaviors must be communicated and enacted through digital channels, requiring leaders to be both strategic and empathetic in their approach. Additionally, Media Richness Theory provides insight into how the richness and frequency of communication tools can shape the effectiveness of interactions. According to this theory, communication that is timely, personalized, and clear tends to reduce ambiguity and promote understanding, factors that are essential in remote team settings.

The Leader-Member Exchange (LMX) theory also informs the present study. LMX focuses on the quality of relationships between leaders and their subordinates, suggesting that stronger, trust-based relationships are linked to better job outcomes. In virtual workspaces, building and sustaining high-quality leader-member relationships is more difficult due to the lack of face-to-face interactions. Therefore, communication frequency becomes a critical element in maintaining these connections and ensuring that leadership efforts translate into positive employee outcomes.

Within this framework, the current research examines how transformational and transactional leadership styles influence job satisfaction among remote software professionals, while also evaluating how frequently leaders communicate with their team members. This intersection—

where leadership behaviors meet digital communication practices—offers a timely and relevant perspective on effective virtual management.

The study is guided by three primary objectives: first, to assess the relationship between transformational leadership and job satisfaction in virtual software teams; second, to evaluate the relationship between transactional leadership and job satisfaction in the same context; and third, to explore how communication frequency moderates these relationships. Each of these aims reflects an effort to better understand the evolving nature of work and leadership in a digital-first environment.

A quantitative research approach is used, drawing on data collected from employees in the software sector who operate in remote or hybrid work arrangements. The analysis is conducted using Structural Equation Modeling (SEM) through the Partial Least Squares (PLS) method. This technique is well-suited for examining complex models involving multiple variables and interactions, making it an appropriate choice for the current study's design.

The findings from this research are expected to offer practical insights for organizations navigating the challenges of remote leadership. By identifying the leadership behaviors and communication practices that most effectively support job satisfaction, companies can enhance their management strategies, improve employee engagement, and foster a more positive work environment. These insights are particularly relevant as many organizations in the software industry continue to refine or expand their remote work models.

On a theoretical level, the study contributes to the growing literature on virtual leadership, offering empirical evidence on how leadership styles function in digitally mediated environments. It also highlights the role of communication as a moderating factor, emphasizing the importance of consistent and meaningful interactions between managers and their teams.

In summary, as the software industry continues to evolve in response to new technological and organizational demands, understanding the nuances of virtual leadership becomes increasingly important. This research provides a timely examination of how transformational and transactional leadership styles relate to job satisfaction and how communication frequency may shape these relationships. By drawing on established leadership and communication theories, the study aims to bridge gaps in current knowledge and support more effective leadership practices in virtual workspaces.

## **SIGNIFICANCE OF THE STUDY**

The shift to remote work, especially in the software industry, has redefined how teams function and how leaders connect with their employees. With face-to-face interactions replaced by digital communication, the role of leadership has become more complex and more important. While leadership styles like transformational and transactional leadership are well-studied in traditional workplaces, their impact in virtual settings, where employees often feel isolated or disconnected, remains less clear.

This study is hence grounded in the recognition that leadership continues to be a central driver of employee well-being and performance, even in remote work environments. However, remote settings fundamentally reshape how leadership is enacted and perceived. Virtual work often limits physical interactions, informal conversations, and visual cues, all of which are vital for building trust and maintaining employee morale. In such an environment, leadership must be reimagined to maintain its influence over team engagement, cohesion, and satisfaction.

At the same time, how often leaders communicate with their remote teams can significantly influence how their leadership is received. Frequent, meaningful communication may strengthen trust and satisfaction, while a lack of it can make even strong leadership efforts less effective. This study aims to fill this gap by examining how transformational and transactional leadership styles affect job satisfaction among remote employees in the software industry, and how the frequency of communication between managers and employees may moderate the strength of these relationships.

## **OBJECTIVES OF STUDY**

1. To examine the impact of transformational leadership on job satisfaction among remote employees in the software industry.
2. To assess the impact of transactional leadership on job satisfaction in virtual work environments.
3. To investigate the moderating role of communication frequency in the relationship between transformational leadership and job satisfaction, and Transactional leadership and job satisfaction.

## **RESEARCH QUESTIONS**

What is the impact of transformational leadership on the job satisfaction of employees in a virtual work environment in the software industry?

What is the impact of transactional leadership on the job satisfaction of employees in a virtual work environment in the software industry?

How does communication frequency moderate the relationship between Transformational and Transactional leadership styles and job satisfaction of employees in a virtual work environment in the software industry?

### **RESEARCH HYPOTHESIS**

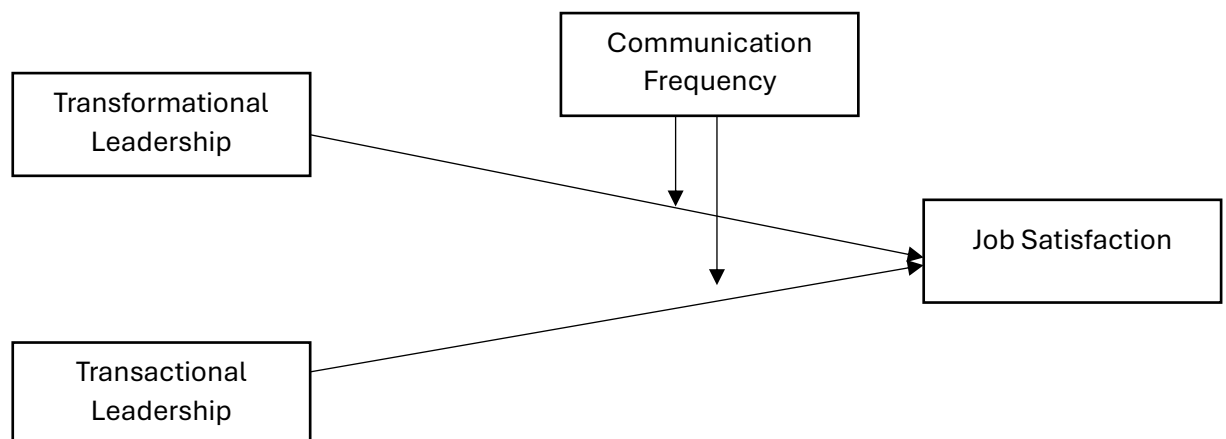
H1: Transformational leadership positively influences job satisfaction of employees in a virtual work environment in the software industry.

H2: Transactional leadership positively influences job satisfaction of employees in a virtual work environment in the software industry.

H3a: Communication frequency moderates the relationship between transformational leadership and job satisfaction of employees in a virtual work environment in the software industry.

H3b: Communication frequency moderates the relationship between transactional leadership and job satisfaction of employees in a virtual work environment in the software industry.

### **CONCEPTUAL FRAMEWORK**



### **LITERATURE REVIEW**

#### ***Virtual Work Environment and Software Industry***

The shift toward remote and hybrid work models has had significant implications for leadership in modern organizations. While this transition affects many industries, the software sector has emerged as a pioneer of virtual collaboration, largely due to its reliance on digital tools, flexible

workflows, and globally distributed teams. Virtual work in software development presents both opportunities and challenges, requiring a reconfiguration of leadership approaches to ensure employee motivation, engagement, and performance (Bartsch et al., 2020).

In such environments, the absence of physical prompts and natural office interactions makes leadership an intentional and strategic process. Effective virtual leadership must compensate for physical distance by fostering psychological proximity and maintaining strong communication. Thus, traditional leadership models are being revisited to understand their relevance and effectiveness in this new setting (Contreras, Baykal, & Abid, 2020).

### ***Leadership in Virtual Workspaces***

Leadership is a crucial factor that shapes organizational behavior and employee outcomes. In virtual environments, its influence becomes even more pronounced as employees depend heavily on their leaders for direction, feedback, and motivation through mediated channels. Effective virtual leadership demands an understanding of both technological capabilities and human dynamics (Zaccaro & Bader, 2003).

Two leadership styles—transformational and transactional—as proposed by Bass and Avolio (1994), remain widely studied in the context of remote management. These styles represent contrasting approaches: one focused on change and inspiration, the other on structure and exchange.

### ***Transformational Leadership and Job Satisfaction***

Transformational leadership refers to a leadership style that inspires, motivates, and encourages employees to exceed expectations by fostering a shared vision and promoting innovation. Transformational leaders engage with their team members on a personal level, offer intellectual stimulation, and act as role models (Bass, 1985). This style has been shown to enhance employee engagement, psychological empowerment, and job satisfaction across various settings (Judge & Piccolo, 2004; Breevaart et al., 2014).

In virtual work environments, the relational and motivational aspects of transformational leadership become especially important. Without the benefit of physical proximity, remote workers rely more on communication, vision-sharing, and emotional support to feel connected and valued. Transformational leaders who effectively utilize digital communication tools can still convey empathy, recognition, and trust—key drivers of job satisfaction (Purvanova & Bono, 2009).

Research shows that virtual transformational leadership positively influences outcomes such as

team performance, morale, and commitment (Larson et al., 2020). Employees under transformational leaders are more likely to report satisfaction due to the sense of purpose and autonomy instilled by such leadership, even when working remotely (Wang, Tee, & Trépanier, 2021).

### ***Transactional Leadership and Job Satisfaction***

Transactional leadership, in contrast, is grounded in clearly defined tasks, rewards, and accountability. It is based on contingent reinforcement: employees are rewarded for meeting goals and corrected when standards are not met (Bass & Avolio, 1994). In structured, task-oriented environments like software development, transactional leadership can be effective in providing clarity, stability, and direction.

In remote settings, where ambiguity can affect productivity and morale, transactional leadership offers clear expectations and a sense of control (Podsakoff et al., 2006). Leaders who use performance metrics and feedback systems can help maintain focus and discipline, both of which are valuable in managing distributed software teams.

Studies suggest that transactional leadership contributes to job satisfaction by offering structure and reward predictability, particularly in environments with high task complexity (Judge & Piccolo, 2004). In virtual contexts, this style can enhance satisfaction if applied with consistency and fairness, supported by reliable communication practices (Tyree et al., 2022).

### ***Job Satisfaction in Remote and Virtual Workspaces***

Job satisfaction is a multi-dimensional construct encompassing an employee's emotional response to their job role, environment, and leadership. Spector (1997) defines it as the degree to which people like (satisfaction) or dislike (dissatisfaction) their jobs. Job satisfaction is critical in virtual work environments, where isolation and lack of visibility can negatively affect morale.

Factors contributing to job satisfaction in remote settings include autonomy, managerial support, role clarity, and communication (Allen et al., 2015). In the software industry, job satisfaction is linked to innovation, team collaboration, and the ability to manage work-life boundaries—areas where leadership plays an influential role.

Leadership styles impact job satisfaction by shaping the emotional and cognitive work environment. Transformational leaders may enhance satisfaction through empowerment and vision, while transactional leaders do so by creating a sense of order and fairness (Yukl, 2013)

### ***Communication Frequency in Remote and Virtual Workspaces***

Communication frequency plays a pivotal role in remote work environments. It influences team

cohesion, information clarity, and perceived support which are all essential for job satisfaction. In traditional work settings, informal communication happens naturally, but in virtual contexts, it must be deliberately initiated and maintained by leaders.

Leader-Member Exchange (LMX) Theory highlights the importance of communication in building high-quality relationships. In virtual environments, high-frequency communication is often necessary to maintain mutual trust and understanding (Gerstner & Day, 1997). When leaders engage frequently with employees, especially using two-way communication tools, the positive effects of transformational and transactional leadership on job satisfaction are likely to be amplified.

Similarly, another theory, media richness theory (Daft & Lengel, 1986) posits that the effectiveness of communication depends on the richness of the medium used and the frequency of interaction. Frequent communication using rich media (e.g., video calls, personalized messages) can reduce uncertainty and foster stronger leader-member relationships. Infrequent communication, by contrast, may lead to misinterpretation, reduced trust, and emotional detachment.

A moderating effect occurs when communication frequency changes the strength or direction of the relationship between leadership style and job satisfaction. For example, transformational leadership may be more impactful when accompanied by regular check-ins and personalized messages, while transactional leadership may be more effective when performance feedback is frequent and timely (Contreras et al., 2020).

While existing studies confirm the individual effects of transformational and transactional leadership on job satisfaction, there is limited research examining how these styles function in fully remote and virtual teams particularly in software industry. Furthermore, the role of communication frequency as a moderating factor remains underexplored in leadership research, especially in virtual contexts.

Most studies either treat communication as a direct predictor or do not examine its interplay with specific leadership styles. There is a growing recognition that leadership behaviors do not operate in a vacuum, communication is the vehicle through which these behaviors are expressed and understood. Thus, examining communication frequency as a moderator offers a deeper understanding of virtual leadership dynamics.

In virtual work environments, especially in the software industry, leadership continues to be a

decisive factor in shaping employee experience and job satisfaction. Transformational leadership fosters intrinsic motivation and engagement, while transactional leadership ensures structure and accountability. Both styles remain relevant in remote settings, but their effectiveness can be significantly influenced by the frequency of communication.

## **RESEARCH METHODOLOGY**

### ***Research Design***

This study employs a quantitative, cross-sectional research design to examine the impact of transformational and transactional leadership styles on job satisfaction among remote employees in the software industry. This design was adopted to empirically test the hypothesized relationships between the study variables across a diverse sample of respondents.

### ***Research Approach***

The research adopts a deductive approach, rooted in existing leadership and organizational behavior theories. Hypotheses were developed based on established theoretical models and tested empirically using statistical analysis.

### ***Population and Sample***

The target population of the study comprises software industry professionals who work remotely, either full-time or in a hybrid capacity. These individuals include software engineers, IT professionals, project managers, quality compliance professionals, and other technical or managerial roles that operate within distributed team structures.

The sampling technique used is purposive sampling, which is suitable for targeting a specific population with relevant experience. Respondents were selected based on specific inclusion criteria, which required that they must be currently employed in the software industry, must be working remotely or in a hybrid work setting, and must have at least six months of experience in their current remote role.

A minimum sample size of 250 was targeted, in line with guidelines for Partial Least Squares Structural Equation Modeling (PLS-SEM), which recommends a minimum of 10 times the maximum number of paths pointing to any construct in the model (Hair et al., 2021). A final sample of 213 valid responses was used for the analysis.

### ***Instrumentation***

The data was collected using a structured, self-administered questionnaire, comprising closed-ended items measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument consisted of four sections, including i. the demographic profile

of the respondents, ii. Transformational and transactional leadership style of managers, iii. Job Satisfaction, and iv. Communication frequency between employees and managers.

### ***Measurement Scales***

The construct of transformational leadership was measured using items adapted from the Multifactor Leadership Questionnaire (MLQ-5X) developed by Bass and Avolio (1995). Subdimensions such as idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration were included. Transactional leadership was measured using MLQ-5X, focusing on dimensions such as contingent reward and management-by-exception. Job Satisfaction was measured using a short-form scale adapted from Spector's Job Satisfaction Survey (JSS), covering facets such as satisfaction with supervision, work content, and communication.

Communication Frequency was measured based on items from validated remote communication scales (e.g., Golden & Veiga, 2008), assessing the perceived regularity and quality of manager-employee communication in a virtual setting. All scales were tested for reliability and validity. Cronbach's alpha and Composite Reliability (CR) of all values were above 0.7 and were considered acceptable. Convergent and discriminant validity were assessed through Average Variance Extracted (AVE) and Fornell-Larcker criteria.

### ***Data Analysis Technique***

The study utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis, conducted using SmartPLS software. PLS-SEM is suitable for this research due to its ability to handle complex models with multiple constructs and interaction effects (Hair et al., 2021).

## DATA ANALYSIS AND RESULTS

### *Respondents Profile*

**Table 1.** Respondents Profile

Factors	Respondents	Category	Percentage %
Gender	213	Male	79%
		Female	21%
Age	213	18 – 25	21.73%
		26 - 35:	45.3
		36 – 45	29.91%
		46 – 55	2.564%
		56 Above	0.855%
		Metric / O – O-level	42.72%
Qualification	213	Intermediate / A – A-level	23.93
		Bachelors	22.22
		Masters	11.11
		Doctorate (PhD)	0
Experience	213	3 to 5 years	20.79%
		5 to 8 years	32.61%
		8 to 10 years	11.97%
		10 to 15 years	16.24%
		15 to 20 years	10.98%
		20 years or above	4.855%

### *Reliability Analysis*

To evaluate the reliability and validity of the constructs, internal consistency, composite reliability (CR), and average variance extracted (AVE) were examined. The results, shown in Table 2, indicate acceptable levels of reliability and convergent validity for all constructs.

**Table 2.** Reliability Analysis

	Cronbach Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Transactional Leadership	0.802	0.748	0.692
Transformational Leadership	0.768	0.891	0.780
Job Satisfaction	0.757	0.894	0.704
Communication Frequency	0.725	0.815	0.754

All constructs demonstrate CR values above the recommended threshold of 0.70 (Hair et al., 2021), indicating adequate internal consistency. AVE values exceed the 0.50 benchmark, confirming convergent validity.

### **Structural Model Assessment**

Path analysis was conducted to test the hypothesized relationships among the variables using Partial Least Squares Structural Equation Modeling (PLS-SEM). The path coefficients, along with their corresponding t-statistics and p-values, are summarized in Table 3.

**Table 3.** Path Coefficients

Path Relationship	Path Coefficient ( $\beta$ )	T-Statistic	P-Value	Significance
Transformational Leadership $\rightarrow$ Job Satisfaction	0.42	5.90	0.000	***
Transactional Leadership $\rightarrow$ Job Satisfaction	0.29	4.20	0.000	***
TRFL $\times$ Communication Frequency $\rightarrow$ Job Satisfaction	0.18	2.55	0.011	**
TRCL $\times$ Communication Frequency $\rightarrow$ Job Satisfaction	-0.07	1.10	0.272	n.s.

The results indicate that both transformational and transactional leadership styles have a positive and statistically significant impact on job satisfaction. Transformational leadership demonstrates a stronger effect ( $\beta = 0.42$ ) compared to transactional leadership ( $\beta = 0.29$ ). Moreover, communication frequency significantly moderates the relationship between transformational leadership and job satisfaction ( $\beta = 0.18$ ,  $p = 0.011$ ), suggesting that the impact of transformational leadership is enhanced when communication between managers and remote employees is frequent.

In contrast, the interaction between transactional leadership and communication frequency is not statistically significant ( $\beta = -0.07$ ,  $p = 0.272$ ), indicating that communication frequency does not meaningfully alter the relationship between transactional leadership and job satisfaction in this context.

## DISCUSSION

The present study aimed to investigate the influence of transformational and transactional leadership styles on job satisfaction among remote software industry professionals, while also exploring the moderating role of communication frequency. The findings offer valuable insights into how leadership dynamics operate in virtual settings, particularly when interpreted through the lens of Leader-Member Exchange (LMX) theory.

LMX theory posits that the quality of relationships between leaders and followers is a critical determinant of employee outcomes such as satisfaction, commitment, and performance. High-quality leader-member exchanges are characterized by trust, mutual respect, and open communication. In virtual environments where face-to-face interaction is limited, these relational elements must be sustained through intentional leadership behavior and digital communication practices. The significant positive effect of transformational leadership on job satisfaction observed in this study aligns closely with LMX theory. Transformational leaders, by nature, foster high-quality interactions by motivating employees, acknowledging their

individual needs, and building a sense of shared purpose—all of which are essential components of effective LMX relationships. In remote settings, these behaviors appear to compensate for the lack of physical proximity, reinforcing the notion that relational leadership can thrive in digital contexts when it is practiced consistently and with intention.

Transactional leadership, while also positively associated with job satisfaction, demonstrated a weaker effect. This result suggests that although transactional behaviors such as clarifying expectations and providing contingent rewards contribute to satisfaction, they may not be sufficient to cultivate the deeper relational bonds emphasized in LMX theory. In the absence of rich, personal interactions, transactional leadership may come across as procedural rather than relational, potentially limiting its impact on employee well-being. Nonetheless, its significance in the model underscores that structure and accountability remain valued components of leadership in virtual environments, particularly for task-oriented roles commonly found in software teams.

A key contribution of the study is the identification of communication frequency as a significant moderator between transformational leadership and job satisfaction. This finding supports the LMX framework by emphasizing the importance of ongoing, meaningful interaction in building and sustaining strong leader-member relationships. Frequent communication likely serves as a proxy for availability, attentiveness, and relational maintenance—signals that strengthen employees' perception of support and recognition. When transformational leadership behaviors are paired with consistent communication, the conditions for high-quality LMX are more likely to emerge, thereby enhancing job satisfaction. On the other hand, the moderating effect of communication frequency on the relationship between transactional leadership and job satisfaction was not significant. This suggests that the transactional approach may rely less on continuous interaction and more on structured deliverables and outcomes, which do not necessarily benefit from increased communication in the same way relational leadership styles do.

These findings are particularly relevant to the software industry, where distributed teams are common and leadership is often mediated through technology. In such settings, the role of communication as a vehicle for relational exchange becomes more prominent. LMX theory provides a robust framework for understanding how the quality of digital interactions can substitute for physical presence, and how leadership strategies must be adapted to ensure the continuity of effective leader-member relationships.

Furthermore, the results contribute to the growing body of research on virtual leadership by empirically demonstrating that not all leadership styles are equally effective in remote contexts. The stronger performance of transformational leadership suggests that leaders who prioritize relational dynamics and employee development are better positioned to meet the psychosocial needs of remote workers. This is especially important in environments where isolation and communication barriers can negatively affect morale and engagement.

## **CONCLUSION**

This study set out to explore the impact of transformational and transactional leadership styles on job satisfaction among remote employees in the software industry, with communication frequency examined as a moderating factor. Using data from 168 software professionals working in virtual or hybrid environments, the findings offer clear evidence that leadership style significantly shapes how remote workers perceive their jobs. Transformational leadership emerged as the stronger predictor of job satisfaction, highlighting the value of vision-oriented, supportive, and motivational leadership in remote contexts. Transactional leadership also demonstrated a positive, though comparatively weaker, effect—suggesting that clear expectations and reward-based systems still have a meaningful place in virtual teams.

Importantly, the study found that communication frequency moderates the relationship between transformational leadership and job satisfaction, underscoring that the benefits of transformational leadership are amplified when leaders maintain regular and meaningful contact with their teams. However, communication frequency did not significantly influence the relationship between transactional leadership and job satisfaction, indicating that transactional strategies may rely less on continuous interaction and more on structured deliverables and expectations.

These results reinforce the importance of leadership adaptability in virtual workspaces and stress that the style of leadership must be thoughtfully aligned with communication practices to maintain employee engagement and satisfaction. As remote work becomes a more permanent feature of the modern workplace, especially within digitally intensive sectors like software development, the ability of leaders to inspire, support, and regularly connect with their teams is increasingly central to organizational success.

## **RECOMMENDATIONS**

Based on these findings, it is recommended that organizations operating in virtual environments—particularly in the software sector—prioritize the development of transformational leadership skills among their managers. Leaders should be trained to articulate a compelling vision, offer individualized support, and encourage innovation, as these behaviors significantly enhance job satisfaction when employees work remotely. Additionally, organizations should invest in communication strategies and technologies that enable frequent and high-quality interactions between managers and team members. This includes not only the use of synchronous tools like video conferencing but also structured asynchronous updates that maintain engagement without overwhelming employees.

Furthermore, while transactional leadership retains its relevance, especially for task-driven roles, it should be complemented with regular feedback and clear communication protocols to ensure alignment in distributed teams. Companies may also consider evaluating leadership performance not solely on output metrics but also on relational aspects such as employee satisfaction and virtual team cohesion. By aligning leadership development with communication frequency and style, organizations can foster a more supportive and productive remote work environment that ultimately benefits both individuals and the broader enterprise.

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